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U. S. SURGEON GENERAL'S OFFICE

ADMINISTRATIVE ASPECTS OF AN EMERGENCY  
NUTRITION PROGRAM FOR NATIONAL DEFENSE  
REFER TO H. D. SGO-720



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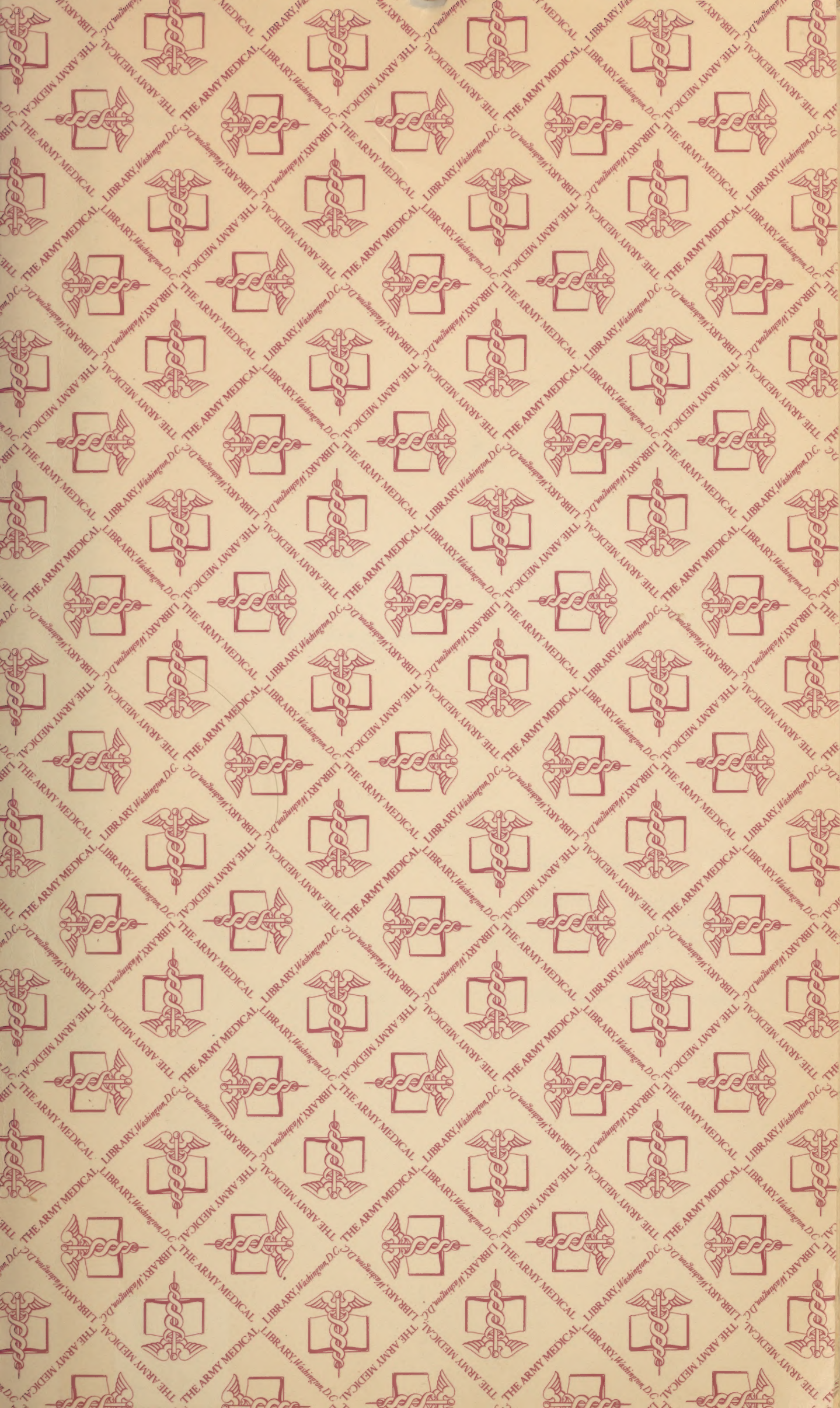


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*U.S. Surgeon-General's Office*

ADMINISTRATIVE ASPECTS OF AN EMERGENCY NUTRITION PROGRAM FOR NATIONAL DEFENSE\*

Refer to: H.D. SGO - 720

By

N. C. Leone, Major, MSC

1 October 1948

\*NOTE:

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29 December 1948

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90 eminent authorities  
throughout the world)

In early 1947 The Surgeon General directed me to study and report upon the problems of integration of administration of civilian and military health services in war. Since that time discussions with many authorities in the fields of health services have resulted in a conviction that one of the major problems could be the adequate feeding of civil populations subjected to the circumstances of war.

As an adjunct to the study the attached report has been prepared. It is obviously presented from the viewpoint of the military administrator properly charged with responsibilities for health programs for civilians during and after war. It must be considered as such and not indicative of future official attitude or policy.

Any comments or suggestions you might make with reference to this study, or subject of the study, would be appreciated. They would be of value also, I am sure, towards development of the overall report.

W. L. WILSON  
Colonel, Medical Corps  
Special Assistant to The Surgeon General

Incl.-Administrative Aspects of An Emergency  
Nutrition Program for National Defense  
(H.D.-SGO - 720.)



## PREFACE

The integration of medical administration of the civilian population in total war necessarily must include consideration of the role which nutrition will play. Such a consideration has been undertaken here. This report was initiated by and has been prepared under the direction of the recently appointed Special Assistant to The Surgeon General (for Civil Health Affairs) as an adjunct to his study, undertaken 1 June 1947 at Johns Hopkins University School of Hygiene and Public Health, by Direction of The Surgeon General, entitled "Integration of Administration of Medical Care for Civilian Populations in Total War". In consideration of the various aspects of this report free use has been made of historical material and references assembled and made a part of the overall study, as well as data from other sources.

In examining the various factors which bear on such a problem it has seemed desirable to present them as follows:

Part I is a discussion of the basic factors of vital concern in the administrative development of a successful nutrition program for future emergency. In the compilation of the material, experiences during World War II, and the knowledge resulting therefrom, have been drawn upon extensively. In addition, numerous conferences and informal discussions with specialists in the field of nutrition, as well as examination of research and other documentary material, have provided a wealth of sound data on which future planning may be based.

Part II is a brief documented review of the historical aspects of nutrition during World War II. The intention here is to emphasize the practical side of such a problem. Never before in history had the solution of a nutrition problem of this magnitude been undertaken. That success was achieved is unquestionable. Much profit can be derived, however, from consideration of the difficulties, errors, and administrative deficiencies which at times hindered the development of a program that became more and more important with the passage of time and the increasing size of the basic problem.

An Appendix contains miscellaneous documentary information which will be of assistance to an administrator concerned with the development of a nutrition program. Listed also are the names of the individuals who engaged actively in some phase of nutrition during World War II and whose services may be desirable for similar duties in the event of future emergency.



## TABLE OF CONTENTS

	<u>Page</u>
Preface . . . . .	i.
Table of Contents . . . . .	ii.
Part I Administrative Aspects of an Emergency Nutrition Program for National Defense . . . . .	1
A. The Basic Problem . . . . .	1
B. Essential Elements of a Nutrition Program . . . . .	2
C. Salient Factors of a Nutrition Program . . . . .	3
1. Program of Education . . . . .	3
2. Nutrition Surveys . . . . .	4
3. Food Requirements . . . . .	5
4. Food Supply and Agriculture . . . . .	10
5. Food Storage . . . . .	14
6. Food Rationing . . . . .	15
7. Preparation and Distribution of Food . . . . .	16
8. Supplemental Feeding . . . . .	17
9. Industrial Feeding . . . . .	19
10. Historical Records . . . . .	20
Part II The Role of Nutrition During World War II . . . . .	21
A. Introduction . . . . .	21
B. Prelude to a Nutrition Problem . . . . .	21
C. The Developing Program . . . . .	22
1. The Period Under SHAEF . . . . .	22
2. The Period Under USFET . . . . .	27
D. The Problems of Personnel & Equipment . . . . .	30
E. Tripartite Surveys . . . . .	31
F. The Role of Nutrition in the Future . . . . .	31
Appendix . . . . .	32-55
Bibliography . . . . .	56-58



## PART I

### Administrative Aspects of an Emergency Nutrition Program for National Defense

#### A. The Basic Problem

Total mobilization of the manpower and resources of the United States, whether made necessary by threatened or actual attack, or by other emergency, will place immediate increased responsibilities upon the Medical Department of the Army. These responsibilities will grow in importance and will demand sound and early planning if major catastrophe is to be avoided. It is in an effort to anticipate such an event that this paper is presented.

Of the numerous medical problems likely to arise, except for that of water, which is in itself a part of the problem in question, nutrition is the most immediate and far reaching. Its nature is such that with the abtunding of the initial motivating or precipitating factor of emergency, it will be the first epidemiological problem to become manifest. It is an established fact that within 3 to 6 hours the earliest indications of the problem can become evident (1) (2) (3).

The first effects of an emergency nutrition problem will merely be annoyance and inconvenience. As the emergency is prolonged, however, the effects will become increasingly evident in the spread of civil unrest, disruption of normal activities, discouragement, demoralization, and a critical displacement of the civilian population. If the initiating factor is due either to atomic or other new type warfare, any displacement or migration of the civilian population, if uncontrolled, will be even more serious.

Equally serious will be the attendant increase of other epidemiological problems, as inadequate or insufficient food results in lowered resistance of the population, first manifesting itself in hunger pains, diarrhea, and loss of strength, and ultimately predisposing the people to disease and infection (4).

Of obviously great importance, also, in the conduct of a total war will be the effect of inadequate or insufficient food in reducing the capacity of the population for work, with decreased industrial and other production and a consequent decreased ability of the nation to survive physically and industrially.

These dangers can be nullified only through means of a complete and clearly defined nutrition program, based primarily upon previous experience and planning and so conceived as to designate plainly what must be done and by whom. Planning must be adaptable both to short-term and long-term emergencies and it must encompass all eventualities, including the roles of the various population segments in terms of their relative importance as parts of the life stream of the nation.

Survival will, of course, be the primary factor, with rehabilitation occupying a secondary place. To realize both of these, it is mandatory that responsible authority make provision for a simple and well organized nutrition program, administratively integrated with State, area, and local public health programs, either separately or in combination. Such a program inevitably must take into consideration what is expected of the population itself as a contribution toward survival and rehabilitation. In developing the program, attention must be given to the varied aspects of any food problem--requirements, resources, storage, transportation, and distribution. Special attention must also be given to the need for supplemental feeding of special population groups, and for industrial and institutional feeding.

In summary, successful traversal of the road to a solution of any future emergency nutrition problems demands:



a. Recognition at the highest levels of civil and military authority of the extent importance, and far-reaching effects of the nutrition problem which could easily arise in the event of emergency.

b. Establishment of specific and over-all authority for the promulgation of an organized and complete emergency nutrition program based upon public health and other laws, with provision for continued operation under martial law if this should become necessary.

c. Establishment of responsibility for the nutritional health and welfare of the various civilian population segments and any other groups which might, in an emergency, be important factors in the stabilization and recovery of the Nation or any of its parts. This responsibility can be established at State, area, or local levels, but it must be well-defined.

d. Organization of a program ready to function immediately or in the indeterminate future and so integrated with normal public health programs in the respective areas as not to require additional specially trained personnel. It is important that such a program should not interfere with the basic operations of the respective health units. But it should be so designed that in the event of anticipated or actual emergency, automatic transition can be effected without delay or disruption of responsibility, activities, or personnel, and without requiring a specific decree to accomplish such transition.

#### B. Essential Elements of a Nutrition Program

The objective of the program to be established must be the maintenance of the nutritional health of the populations concerned. Simplicity must be its keynote. To this end it is mandatory that immediate steps be taken to insure the availability of the following information:

a. The number and identity of individuals for whom responsibility will exist, including their activities and their relative importance to the survival of the population as a whole (5) (6) (7).

b. The age categories, distribution, physical condition, and geographical relationship of the respective population segments under normal conditions and as anticipated in the event of emergency. Included must be information concerning expected population migrations under normal and emergency conditions, with adequate consideration of any changes of status resulting from the basic cause of the migrations or from the migrations themselves.

c. Normal food and water requirements, to include basic foods needed, food habits, and food sources.

d. Minimum dietary requirements necessary to provide for a reasonable state of health over indefinite periods of time, these to be established on the bases of category, activity, and relationship to national survival of the various population segments.

e. Rehabilitation dietary levels for the respective population groups.

f. Clear definitions of the time periods involved in "short-term" and "long-term" nutritional emergencies. (Until such clear definitions are made available by responsible authority, for the purposes of this study a "short-term" emergency will be considered as any period less than six months; a "long-term" emergency as any period not less than six months or longer than two years.)

A knowledge of the problem is not in itself sufficient. The solution must be actively sought. Fundamental to this aim are the following basic steps:



- a. Immediate inauguration of an educational program for the entire medical profession, including local physicians, dentists, veterinarians, and auxiliary medical groups, to insure their awareness of their respective roles in the nutritional aspects of a national defense plan.
- b. Initiation of local studies to determine the types and quantities of indigenous foods or food substitutes available in the respective areas for normal or emergency use (8) (9).
- c. Establishment of a plan for an efficient food rationing and price control system, with adequate provision for supplemental foods as required.
- d. Establishment of a plan for a rigid food collection system having as its primary objective uniform availability and distribution by preventing diversion of needed food supplies into the black market or the development of other illegal practices.
- e. Initiation of a program of food stock piling of basic foods in quantities sufficient to insure that certain basic foods, notably bread and potatoes, can be ration free. (10) (11).
- f. Appraisal of the possibilities of planned decentralization of nonessential population segments from industrial or other areas of population concentration to less populous areas, where their care and maintenance will create fewer problems (12) (3).
- g. Institution of a program of industrial feeding to insure maintenance, so far as possible, of maximum production under conditions of stress (13).
- h. Organization locally of necessary facilities and personnel, including a plan for a system of communal feeding, to insure area independence in the event of isolation.

Each of these steps inevitably will involve consideration of many factors which can determine the eventual success or failure of the entire program. With this in mind, in the following section of this report an attempt will be made, in the light of historical experience, to anticipate the major problems which will be encountered and to point a way to their solution.

### C. Salient Factors of a Nutrition Program

#### 1. Program of Education

In the event of total war, it will fall upon the medical profession, including the dentists, veterinarians, and auxiliary medical groups at each level of society, to guide the population safely past the dangers which are inherent in the neglect of nutrition. It is incumbent upon the medical profession to prepare itself for this task, which will, as a matter of course, include the preparation of all segments of the civilian population for the roles they must play.

To avoid any hiatus if an emergency should confront this nation, it is imperative that there be inaugurated immediately a program of nutritional education designed to acquaint the medical profession, and through it the civilian population, with the problems that will present themselves and how they can be solved.

Such an educational program should lay particular stress upon the following:

- a. The nature and extent of the nutrition problems which now exist.
- b. The probable nature and extent of the problems which can arise in the event of an emergency, and the need for planning to avoid them so far as possible.



c. The definition and importance of time factors, i.e., short-term and long-term emergencies, in determining the nature and effects of nutrition problems.

d. The probable effects of a serious nutritional problem upon industrial production, and thus upon our national potential for survival.

e. The physiological and psychological effects of such a problem upon the population. Physiological effects result from injury, disease, infection, or lack of attention to proper nutrition. It is important to note that psychological effects result from diverse conditions, of which lack of food is one of the most important.

f. The value of nutrition surveys and body weighing programs in maintaining and controlling the health trend of the population. (In this connection, reference is made to the discussion in this paper of "Nutrition Surveys", and to the evidence adduced in Part II of this report of the importance and value of such activities.)

g. The importance of procuring and allocating trained personnel to participate, under the guidance of the medical profession, in nutrition surveys, body weighing programs, food service for large groups, communal and industrial feeding programs, and the like.

h. The role of all types of institutions, both public and private, as self-sustaining units insofar as possible, and in many cases as contributors to the welfare of other institutions or the population as a whole through production of needed materials surplus to their own requirements.

## 2. Nutrition Surveys

In our efforts to solve the problems of nutrition we cannot confine ourselves exclusively to theorizing. The scope of the problem as it presently exists in fact among our population groups must be determined and published, not only to insure that remedial action will be taken where necessary and possible but also to provide a basis for controlling the health trend of the nation in the event of future emergency. Experiences of World War II provide ample evidence that nutrition surveys are an efficient means to this end.

A system of nutrition surveys should be set up on an area or local basis, as recommended by the United States Public Health Service for individual States (5) (14) (15) (16). Uniformity on a nation-wide basis, however, must characterize the methods used and the data presented in order to insure ready interpretation, comparison, and consolidation (17).

Two basic steps will facilitate the achievement of this goal of uniformity:

a. Publication and use of an accepted method of cursory surveys, to include the determination clinically of the nutriture of the people, the average food consumption of various groups (18) (19), and certain biochemical studies to substantiate the findings (20). In the conduct of these surveys, methods are recommended similar to those employed in the European Theater of Operations during the period 1944-1946, and, with slight modifications, now being used with success by the United States Public Health Service (16) (17) (20).

b. Publication for incorporation in the general survey methods of a glossary of well defined clinical signs and symptoms related to nutritional deficiencies (18) (21).

As previously stated, during World War II the value of a body weighing program in determining the trend of the health of a population was amply sustained. Such studies, to be conducted in schools and industrial plants, on street corners, etc., certainly should be included as a supplement to nutrition surveys in planning an overall nutrition program. Appendix III and



and Appendix VI to this report outline the procedure followed in the European Theater with outstanding success. The simplicity of the undertaking and the value of the results commend this method to those responsible for future planning.

To achieve the maximum results from a body weighing program, however, there is a necessary precedent. Officially recognized average height-weight figures, usable for the population as a whole, are necessary if the over-all health trend is to be observed (22). Such statistics are not available at the present time. Special studies looking to the establishment of such figures should therefore be conducted and the results published in order that this information may be readily accessible.

### 3. Food Requirements

Determination of the food requirements necessary to maintain the health of the various population segments is the cornerstone of all nutrition planning. Such determination, however, is contingent upon adequate identification of the numerous age-activity groups that normally make up a population. The need is urgent, therefore, for publication of authoritative standards established in the light of present knowledge of the foods required under varied circumstances.

At the present time we are confronted with several sets of requirement figures for various groups, all established under different circumstances. Except for the "Recommended Optimal Levels of Food Consumption" published by the Food and Nutrition Board of the National Research Council, none of these figures represent agreement in all details, nor are they uniformly accepted or interpreted. Clarification is vitally necessary if we are to have a basis upon which we can establish an acceptable program which will assure not just survival but a fair state of health and the maximum of industrial production under emergency conditions.

Confronted with this confusion, our efforts must be directed toward insuring that the following steps are taken as early as possible:

a. Publication of simplified and authoritative short-term and long-term "existence levels" and "rehabilitation levels" of food consumption capable of ready interpretation and efficient application.

b. Publication of an authoritative listing of simplified population categories or other means of identification which can be readily and uniformly applied in an emergency nutrition program. (A system of weighted values, as originally advanced in "A Detailed Plan for Nutrition Surveys in Liberated and Occupied Countries" (17) is worthy of consideration in this connection. This system advocated setting up a single ration with numerical designations for the various population categories. For example, a sedentary adult man would be 1.0; sedentary females 0.8; pregnant or nursing mothers 1.6. Such figures can, of course, be adjusted as required. The value of such a system lies in the uniformity of planning, ease of interpretation, and simplified logistics which it makes possible. Under a system of this type only special supplementary foods would require special consideration. )

c. Publication of authoritative tables of food values to provide a uniform basis for all food planning. (23) (24). At the present time numerous interpretations of food values are available from various sources, resulting in difficulty in interpretation and logistical planning. Although a slight difference in values is relatively insignificant in the contemplation of individual dietaries, a variation of a very few percent may involve thousands of tons of food when provision for millions of people over long periods of time is the aim. This fact was certainly substantiated during the planning prior to D-Day in the European Theater, when the "Combined Working Party" figures (see Part II of this report) were developed.

d. Publication of precise definitions of the time periods involved in "short-term" and "long-term" nutritional emergencies in order that proper application may be made of the basic principles of food requirements



under any given set of circumstances.

Food requirements as a whole are expressed in terms of calories (energy) and food nutrients. Too often, in large scale planning, undue emphasis is placed upon calories to the exclusion of fats, proteins, vitamins, and minerals. It is imperative that these food nutrients essential to health receive their proper share of attention at all times in the planning, production, preparation, and substitution of food supplies.

In view of the dearth of scientifically determined publicized data, immediate nutrition planning must be predicated primarily upon the experiences of nutrition experts during World War II.

Information derived from such experiences indicates that an average of 2,000 calories per person per day, without particular regard to age or activity, is a desirable goal of supply under emergency conditions. When 2,000 calories per person per day were available to various of the European peoples, no serious loss of body weight or other deterioration was noted. In his Gluckstein Memorial Lecture in 1947, Sir Jack Drummond, of the British Ministry of Food, commented on this (10).

"The fact remains that under these conditions people subsisted for long periods without harm to health on diets providing 1,800 to 2,000 calories a day and 35 to 50 grams of protein \* \* \* In the same manner we can account for the survival, with poor physical energy output, of millions of the underfed populations of the world today."

Sir Jack Drummond stated further that in his experience the figures in the following table (Table I) represent marginal consumption figures upon which man can apparently exist:

TABLE I

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MARGINAL NUTRITIVE REQUIREMENTS IN THE LIGHT  
OF WARTIME EXPERIENCES (10)

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Calories	2000
Protein	35-50 gms (25 gms animal protein, minimum vegetable)
Vitamin A	2000 I.U.
Thiamine	.35 mg per 1000 cal.
Riboflavin	1.5 mg daily
Niacin	10.0 mg daily
Vitamin C	30.0 mg (League of Nations estimate)
Calcium	1.0 (same as NRC estimate)

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Although these wartime experiences offer at least a starting point, a brief discussion of some of the levels suggested by various sources will underline the need for clarification and uniformity.

National Research Council, Recommended Optimal Levels of Food Consumption (25). -- These levels, as revised June 1948, are included as Appendix I of this report. At the present time they appear to be the only figures of this type capable of uniform interpretation and acceptance in the light of our present knowledge. They do not, however, provide guidance under conditions other than optimal. Their value for emergency planning is therefore questionable.



Another defect is that these data represent "agreed upon" figures and are not derived from planned studies having as their purpose the determination of the optimal levels which are actually required. It naturally follows that a prime necessity is the conduct of "pilot" studies to establish the true physiological interpretation of these figures and thus make them useable for basic comparison in emergency planning.

National Research Council, Benchmark Levels.--In a memorandum dated 13 December 1946, the Food and Nutrition Board of the National Research Council set up caloric "benchmark levels" to facilitate the analysis of problems concerned with the relationship of food consumption to health, well being, and capacity for work (26). The composition of these levels requires explanation. They are based upon a designated "reference level", defined as the caloric consumption on which each particular population segment should be able to carry on its normal activities and maintain its normal weight. The six "benchmark levels" designated by the Research Council are itemized and commented upon in Appendix II of this report.

It is of note that the "Optimal Rehabilitation Level" included in this list has no relationship whatever to the Research Council's optimal consumption levels, as revised June 1948 (25). Use of this terminology, therefore, merely adds to the confusion. Further, if the six "benchmark levels" are to be widely publicized and used, the purpose of clarity might better be served if the level designated as 100% of normal were called the "Normal Existence Level" rather than the "Reference Level".

It is unfortunate that in its Preliminary Version of OIR Report No. 4380 (PV), dated May 7, 1947, the Division of International and Functional Intelligence of the Department of State has apparently assumed that these "benchmark levels" are widely published, useable figures under varying conditions (27). In offering these levels, however, the National Research Council emphatically stated (26):

"It should be clearly understood and constantly borne in mind that this discussion relates exclusively to short-time planning for current food emergency."

If use is to be made of these "benchmark" figures, they should first be substantiated by "pilot" studies similar to those suggested for determining the accuracy of the optimal levels. It is also important that the term "benchmark" be clarified, and that the figures, when substantiated, be made available by publication by some responsible source.

National Research Council, Emergency Level for Use of the Armed Forces.--In January 1943 the Research Council, in a confidential report\* proposed an emergency level of approximately 70 percent of the optimal levels recommended, as revised in June 1948, for the use of the armed forces only. Emphatically this figure was not for use in determining civilian requirements during an emergency. Actually, it more closely resembles a normal civilian "existence level". Table II below compares the NRC optimal values for sedentary man with this confidential 70% figure. Consideration of the various recommendations of the Research Council, both published and unpublished (25) (28) (26) would indicate that this suggested 70% figure represents 1,680 calories per man per day plus nutrients in the quantities indicated. It will be seen, however, that no caloric intake is actually indicated in this table.

\* The Executive Secretary, Food and Nutrition Board, National Research Council has informally advised that the report no longer requires confidential status. However it is important to note that it does not represent a minimal standard recommended by that Board for general use at any time.



TABLE II

NRC Recommended Levels for Sedentary Man, June 1948 (25)		NRC 70% Emergency Level for the Armed Forces
Calories	2400	As required for physical activities of the individual.
Protein	70 gm.	0.7 gm per kg for 70 Kilo man
Calcium	1.0 gm	0.6 gm
Iron	12 mg	6 mg
Vitamin A	5000	3000 I.U. (or 1500 I.U. of true Vitamin A)
Thiamine	1.2 mg	0.33 mg per 1000 calories or 1.0 mg per 3000 or 1.5 per 4500.
Riboflavin	1.8 mg	0.5 mg per 1000 calories.
Niacin	12 mg	3.3 mg per 1000 calories or 10 mg per 3000 or 15 mg per 4500.
Vitamin C	75 mg	50 mg

Food and Agriculture Organization of the United Nations, Report to the Director General, April 1946. -- A conference was held by the Food and Agriculture Organization from 25 to 30 April 1946 to consider the establishment of levels of food consumption to apply under a variety of circumstances. The consultants who were called upon to provide such information submitted the following in a report to the Director General of the Organization (29).

"1. The Committee conceived its task as that of providing guidance to FAO on the nutritional aspects of the problems \* \* \* The report in the first place puts forward recommendations about food consumption levels which are defined as follows:

"(a) AN EMERGENCY SUBSISTENCE food consumption level needed to prevent the most serious under-nutrition leading to disease and the danger of civil unrest. For European countries, this level is defined as an average daily intake per head of 1900 calories, requiring a national average of not less than 2200 calories at retail level.

"(b) A TEMPORARY MAINTENANCE level, sufficiently high to maintain populations in fairly good health, but not for rapid and complete rehabilitation. For European countries this level is defined as an average daily intake per head of 2200 calories, requiring a national average supply of not less than 2500 calories at retail level; \* \* \* The Committee \* \* \* was unanimously of the opinion that recommendations regarding such levels (Emergency Subsistence and Temporary Maintenance), based on direct experience, would be of practical value in the emergency.

"2. Emergency Subsistence. The table below gives the individual calorie intake in the different age and sex groups and various categories of workers at this level of consumption."



It refers to European countries and indicates the point below which the consumption of no section of the population should fall if serious consequences are to be avoided. The figures are approximately 75 percent of those given in the Recommended allowances of the National Research Council, U.S.A., and the table is supported by actual experience of the point at which severe under-nutrition becomes apparent among European populations.

Table 1  
Emergency Subsistence Calorie Intake

<u>Category</u>	<u>Calories Per Day</u>	<u>Category</u>	<u>Calories Per Day</u>
0-2 years	1000	Normal consumers - Male	1900
		(sedentary Female	1600
3-5 years	1250	Moderate workers	2000
6-9 years	1500	Heavy workers	2500
10-17 years	2000	Very heavy workers	3000
Pregnant and nursing women	2000		

"The figures refer to the actual intake of calories. The intake figure per head of population derived from the table as a whole is approximately 1900, assuming a population which as regards age, sex, and activities is approximately the same as that of the United States. It is important that the relation of a per capita intake figure of this nature to the actual food position in any given country should be clearly understood.

"If the calorie intake of any section of the population falls appreciably below the 'emergency subsistence' level for any length of time, serious consequences must be expected and preparations should be made accordingly. Attention must be given to institution of famine relief measures, e.g. soup kitchens, and to the provision of medical supplies and the preparation of hospital accommodation to deal with the disease which will follow semi-starvation. The clinical treatment of severely mal-nourished people may become a problem of importance. While it is hoped that famine will not occur on any considerable scale in the near future, governments and emergency organizations should have plans prepared to deal with it if the need arises. All experience shows that it is too late to organize effective famine relief measures after famine has made its appearance.

"3. Temporary Maintenance. The minimum calorie intake figure suggested for this level of consumption is 2200 per head of population daily. In order to ensure that the intake of no section of the population falls below this level, the considerations put forward above with regard to the emergency restricted scale will be equally applicable, and the national average supply of calories per head daily at the retail level should be at least 2500. 'Temporary maintenance' intake, in comparison with 'emergency subsistence' intake, will permit some improvement in the growth of children and in the general health of the population and a more effective over-all output of work.

"Table 2 shows the calorie intake figures for the various groups from which the per capita figure of 2200 calories daily is derived. These figures are approximately half-way



between the emergency "subsistence" levels and the recommendations of the National Research Council.

"Protein intake would receive attention in connection with less unsatisfactory level of consumption. Table 2 indicates the total protein intake which is regarded as desirable. The derived per capita figure is about 60 grams daily. At least 10 percent of the total protein should be in the form of animal protein. An increase in protein intake will hasten the speed of recovery and a reasonably adequate consumption of animal protein is of value for psychological reasons.

Table 2  
Temporary Maintenance Calorie Intake

<u>Category</u>	<u>Calories Per Day</u>	<u>Proteins Per Day (gms)</u>	<u>Category</u>	<u>Calories Per Day</u>	<u>Proteins Per Day (gms)</u>
0-2 years	1000	30	Normal consumers (sedentary)		
			Male -	2200 (	
			Female -	1800 (	65
3-5 years	1500	45	Moderately heavy workers	2500	65
6-9 years	1750	55	Heavy workers	3000	65
			Very heavy workers	3500	65
Pregnant and nursing	2500	90			

"Distribution \* \* \* This involves effective and equitable systems of crop collection, price control, the discouragement of black market activities in certain countries and the application of ration scales based on the true physiological needs of the different age, sex and occupation categories within the population. Governments are responsible for ensuring that all food supplies obtained from outside sources reach those in greatest need. Further, it is obviously essential that countries asking for additional food supplies should present an accurate picture of their food situation, and in this connection the manner in which available food supplies are distributed, and the efficiency of food administration, are of importance."

The fact that still other interpretations of food requirements exist than those cited above should be sufficient evidence of the need for uniformly acceptable figures if planning is to result in a successful program.

#### 4. Food Supply and Agriculture

The importance of agricultural production to the well-being of the nation cannot be emphasized too strongly. The success of the entire feeding program of the British (10) (30) has been due to the early realization that their agricultural deficiencies, import tonnage requirements and food needs called for prompt adjustment of their agricultural production. This resulted in a great increase in the production of indigenous foods, with emphasis on high caloric content and the maximum yield of food nutrients. Had the unguided production of high priced, luxury foods been permitted in Britain, nutritional chaos would have resulted during the war period in view of shipping and import limitations. It might be added that much of the success of the British program can be attributed to the fact that bread and potatoes were ration free.

The British example is sufficient evidence that emergency planning, even in our more favored country from an agricultural standpoint, must include an agricultural program which encompasses an understanding of the total feeding problem, the basic food requirements of the population, and the agricultural possibilities of the nation. Such a program should be based on two-year planning periods, these constituting "long-term" emergency periods.



It has been pointed out that the British program owed much of its success to the fact that bread and potatoes were ration free. A cardinal feature of any sound nutrition policy when food supply is restricted must be the provision of a reservoir of cheap, unrationed, energy-providing food which will enable the people to appease their hunger no matter how short the supply of other foods might be. In this country and, indeed, in most of Europe, the two staple foods which fit this picture are bread and potatoes. They might well be called "buffer" foods.

If we are not to be found agriculturally wanting in the event of an emergency, it is imperative that an assessment be made of our present food production and of the potentialities for planned conversion, if necessary, to production providing the maximum return under emergency conditions.

According to recent agricultural reports, 2.7 acres of cropland are required to produce an average diet (31). This fact is particularly important in the light of current agricultural estimates indicating an average daily consumption in the United States of approximately 3,400 calories A.P. (32). If emergency should so dictate, this 3,400 calorie figure can certainly be decreased by curtailment of waste, simplification of dietaries, and increased emphasis on consumption of high energy foods. Food and Agriculture Organization estimates indicate that consumption of food in the form of livestock represents about 1/7th of the actual basic energy foods originally produced (33). FAO suggests a factor of 7 times available livestock to indicate true production when grain and other foods are fed to livestock.

Estimates furnished by the Bureau of Agricultural Economics of the United States Department of Agriculture indicate that normal United States production varies from 4,000 to 12,000 calories available per person per day based upon a population 142 million (1947) and dependent on whether food is consumed as grain or fed to stock and conserved in part as animal products.

Such figures are of vital importance in anticipation of a food stockpile, enforced reliance upon indigenous foods, or the establishment of an emergency ration system.

In order to insure coordination in agricultural production, there should be appointed in each area or locality an agricultural Production Committee to operate under the guidance of State or local agricultural experts. The primary function of these Committees must be the evaluation of current production in their respective areas and the direction of conversion to more necessary production where required.

Conservation of Our Natural Resources.-- In a statement at the 1948 session of the New York Herald Tribune's annual forum, Mr. Fairfield Osborn, the eminent author of Our Plundered Planet, said:

"The cultivable areas of the earth, in relation to population, are now so limited that there are less than two acres available per person. Regardless of how food experts may differ on man's needs, this will not be enough to feed more people, pressing for higher living standards, if we continue our reckless practices \* \* \*"

In the light of this statement, it is hardly necessary to stress the great responsibility of agricultural advisers to insure that soil depletion and exploitation will not result from increased production, whether under normal or emergency conditions (34) (35). It is their responsibility, also to see that conversion is not attempted in areas or soils unsuited to the contemplated production. And finally, for maximum results, harvesting and transportation must be coordinated to avoid loss through spoilage.

Any agricultural program is, of course, dependent upon adequate provision of four important items: fertilizer, draft power (mechanized or other), manpower, and feedstuffs and fuel. Lack of any one of these can



seriously affect production. In the long range view, the lasting effects of insufficient fertilizer make it the most important of these. This fact is best demonstrated by the present conditions in Europe, where production has been so greatly retarded by the accumulated wartime fertilizer deficiency (33).

Emergency Food Sources.-- Deserving of attention in this discussion of food supplies are several sources which often receive little attention. When food is limited, fish may be a most important source of supply. It is noteworthy that during the war period the Scandinavian countries, particularly Norway, with reasonable quantities of fish, potatoes, and bread, maintained a simple but adequate long-term emergency dietary that provided for a fair state of health among the populations concerned. Studies of the quantity and availability of fish in the respective localities therefore are of importance.

Throughout the world, too, certain grasses, weeds, and other native plants constitute good food sources for exploitation under emergency conditions (8) (36). Studies of such food sources should be conducted wherever possible to determine the location, quantities, and times of year available.

The possibilities of developing such emergency food sources are immense. They must not be neglected.

The Problem of Control.--During an emergency it is more than ever necessary to prevent diversion of food supplies to the black market or other channels which might result in unequal distribution. Uniform crop collection control is therefore mandatory.

Also necessary is the protection of such vulnerable supplies against adulteration, dangerous or illegal substitution, reduction of food value through carelessness or illegal practices, or the addition of poisonous or deleterious substances. To provide the needed safeguards against these dangers through official surveillance of the production, transportation, storage, and supply of all types of foods we have ready at hand a most competent force for this purpose-- the Federal, State, and local food and drug authorities. At the present time the laws governing these agencies impose strict limitations on their activities, which, under normal conditions, is all to the good. In the event of emergency, however, they can make their maximum contribution to the overall food program only if they are provided more freedom of action. Consideration must therefore be given to emergency provision for expansion of the jurisdiction and authority of such agencies to the point where they can do the job which will be expected of them.

The Role of Other Countries.--In developing an overall nutrition plan we must include consideration of and provision for the populations of other countries, whether belligerents or not, whose welfare has a direct bearing on our own public health and survival. Such consideration must encompass not only short-term emergencies, but also long periods of time following a sudden crisis.

It deserves emphasis that a knowledge of the previous state of agricultural production, food distribution, dietary habits and customs of the peoples of the respective countries of the world (33), along with a knowledge of the nutritional state of the populations, are essential to any military government or civil affairs operation.

Bread and Flour.--No single item of food demands more undivided attention in the consideration of nutrition policy than does bread and its major ingredient, flour. The experience of the peoples of Europe reveal the importance of these as staple foods. When bread and potatoes were available in unlimited quantities, supplemented by whatever indigenous vegetables, fruit, and even edible grasses and weeds might be at hand, whole populations were able to survive in a surprisingly good state of health. Nutrition surveys throughout the war period substantiated this fact repeatedly.

In this connection it is of great importance that certain factors relative to the supply of bread and flour receive priority consideration.



Under emergency conditions, flour should be used of an extraction range of not less than 82% (85% preferred). The experiences of both the French and the British indicate that flour of 82-85% constitutes the optimum range of extraction in terms of nutritive value, baking quality, appearance, flavor and consistency of the finished product (37). A word of warning is in point here, however. It has been known for some time that long extraction flour is richer than commercial white flour of 70-72% extraction in iron, calcium, and some of the B vitamins. On the other hand, Mellanby and others have shown that long extraction flour (85-100%) contains a higher percentage of phytic acid, which interferes with the systemic utilization of calcium (38). Phytic acid in itself has high rachitogenic properties, mainly through its inhibitory effect on the absorption of calcium from the gut. Therefore, when long extraction flour is being used, calcium carbonate should be added in the quantity of 14 ounces of CERTA PREPARATA per each 280 pounds of flour (5 oz. per 100 lbs) (British Medical Research Council) (37). This addition of calcium to flour is especially desirable when milk and other good sources of calcium are limited.

Attention must also be given to the bran particle size of long extraction flour. Particle size not only effects digestibility, but also influences appearance, texture, and palatability -- considerations of obvious importance in the United States, where highly refined white flour has long been preferred. The particles should not exceed 0.5 mm in diameter for maximum digestibility. The direct relationship of bran (fibre) content to digestibility of long extraction flour is indicated in the table (Table III) below (39):

TABLE III

RELATIONSHIP OF DIGESTIBILITY  
TO  
EXTRACTION OF WHEAT FLOUR (39)

Percent Extraction of Flour	75.0	85.0	90.0	95	100.0
Percent Energy Digestibility	97.0	93.9	91.5	88.7	86.3

A source of considerable controversy during World War II was the considerable variation in the food values for flour and grain. To overcome this difficulty in the future and to achieve uniformity in calculating the caloric values of bread and flour, the National Research Council recommends the use of the following figures:

TABLE IV

Level of Extraction	Calories per 100 gm	Calories per 100 gm cleaned whole wheat (12% moisture) to be milled at specified rates
Essentially whole grain, 97-100%	335	335 (calculated at 100%)
Intermediate, 85-93%	350	315 (calculated at 90%)
White Flour, 70-74%	365	255 (calculated at 70%)

Food Stockpiles. -- In its report entitled "Report of Petroleum in Relation to National Defense", issued in mid-1948, the Special Subcommittee on Petroleum of the Committee on the Armed Services, House of Representatives, states (40):

"The subcommittee finds it difficult to excuse the services for not having prepared and submitted to congress, months ago,



This remark pertains to oil, of course. It is imperative that measures be taken to insure that those persons responsible for maintaining adequate food supplies for our population for emergency use shall not <sup>be</sup>/equally vulnerable.

The experiences of the war period brought home to Great Britain the vital necessity of food stockpiling in addition to the stockpiling of other materials. As a result, for example, through means of their "Overseas Resources Development Act" of February 1948 (41), Britain is sponsoring the widescale production of peanuts in Africa. In addition to economic advantages, this program will provide a means of improving the dietary pattern in Britain and will allow the stockpiling of fats, oils, and proteins.

In the United States—so often referred to as a "land of plenty" — excessive waste, both in food preparation and as table waste, is almost of sinful proportions in this world where the starvation of millions of people is all too common. According to Russell M. Wilder and others (42), an average decrease of 10% in food consumption in the United States can be of general benefit to the population. Such a decrease, plus the substantial savings which would result from a reduction of food waste, would contribute enormously to the overall food picture of the nation.

Our responsibility for inaugurating a food stockpile program is evident. Equally evident is our responsibility for implementing such a program through a nation-wide effort at food conservation and reduction of food waste. That the people of the nation will cooperate in this endeavor once the need is made evident is attested by their whole-hearted response to similar programs during the recent war period.

Before leaving this subject, a word of warning is in point. Fertilizer -- to make continued food production possible over a long period—must be included in a stockpile program. Large quantities of powdered milk must be accumulated as rapidly as possible. And from its inception, the possibility of having to limit production of luxury food items, among others ice cream and confections, must be kept in mind.

## 5. Food Storage

In the ~~other~~-all consideration of the problems of nutrition, food storage is the most often neglected. In essence it is the successful termination of production, conservation, rationing, and all other measures intended to increase food resources. Inconvenience and waste are natural results when this problem is neglected. Most important, however, is the absence of planned supply due to loss of food which has been improperly handled or stored. Obviously, if there are no worse effects, adverse psychological manifestations among the population will result, and these will be especially aggravated during period of particular stress.

Successful planning can avoid such contingencies. Of primary importance in this respect are the following:

a. Designation by responsible authorities of properly dispersed facilities for adequate storage of food for emergency use. (Possible voluntary or forced migrations of large population groups must receive consideration in connection with the location of food storage facilities.)

b. Insurance of adequate transportation facilities in connection with food storage centers, not only to insure that supplies can be brought to the storage centers but also that eventual distribution to the populace can be accomplished.

c. Institution of adequate measures for handling and storage to avoid loss through infestation (rodents and insects), water damage (rain or floods), freezing, heat, or enemy action (radiation, gas, bacteria, explosive bombs, etc.).



d. Marking, rotation, and distribution of stores to prevent loss through decomposition or degeneration because of age or lack of attention.

e. Avoidance of temporary regional food shortages through maintenance of balanced stocks. (During an emergency, when a simplified dietary will be the rule, depletion of one or more essential items because of over-distribution or lack of foresight can result in serious physiological and psychological effects often difficult to correct (43).

f. Special allocations of food, where necessary, to hospitals, prisons, orphanages, and other institutions (42). (Past evidence supports the contention that these segments of the population are often forgotten in planning for normal as well as for emergency periods (42) (44) (45).

g. Development of bulk storage containers to provide maximum protection for stored food, efficient use of storage space, and ease in handling and distribution to groups of planned sizes.

h. Storage which will allow for easy shifting or distribution of stock. (This is particularly important where a disturbed or weakened peoples can incur injury in attempting to handle food supplies or where access to supplies is made difficult.)

i. Restriction of storage, insofar as possible, to foods which will provide maximum food values along with ease of distribution and preparation.

j. Avoidance of the storage of perishables except where optimum conditions exist for rapid distribution. (Decomposition of perishables can be a major source of amplification of overall public health problems.)

k. Consideration, in studies relative to food storage, of the practicability of enlisting the cooperation of wholesale food distributors and manufacturers to arrange for the establishment of a system of well disbursed warehouses in which an allocated amount of basic foods designated for emergency survival will be assured.

## 6. Food Rationing

An equitable distribution of food supplies is an aim to which we can all subscribe. It is to this and that provision for a food rationing system for emergency use must be a part of an overall nutrition program. Past experience provides us with measurements upon which we can base such a system.

A major premise in such a system must be the strict maintenance of distribution of foods in keeping with an official ration level of not less than 1550 calories per person per day. This was found to be the critical figure during World War II and the period following. For example, when the official food ration in Germany fell below this figure, early undesirable effects were noted in the population. Starvation and rehabilitation studies by Ancel Keys and his group at the University of Minnesota further substantiate this figure (46) (47).

European experience indicated that normally an additional 380 calories per person per day were obtainable through unrationed foods, unofficial sources such as the black market, and other means, providing for a total consumption of approximately 2000 calories per person per day. As stated by Sir Jack Drummond:

"It seemed hard to believe so much supplementary food reaches the people -- but authorities both misjudged the resourcefulness of hungry people and the ingenuity of those who ran the black markets." (10)

In establishing an official ration figure, therefore, it is of the utmost importance to consider whether supplemental foods are or will become available through other sources. If the official ration represents the total of all foods available for consumption, the figure of 1550 is not adequate. Once again



we can look to our World War II experiences for support of this statement. In the prison and concentration camps, where no supplements were to be had, the 1200 and 1500 calorie diets resulted in widespread emaciation among the populace.

"A cardinal feature of a sound nutrition system-- when food supply is limited is the provision of a reservoir of cheap unrationed food of high energy value--e.g., bread and potatoes--plus a belly filling quality." (10)

The above statement of Drummond can well be a guiding light in the operation of a rigid food rationing system. As stated before the provision of these two basic protective foods made it possible for the British, through a prolonged period of food rationing and restriction, to maintain a state of health actually better than in pre-war years. We can well follow their example in providing unrationed bread fortified with calories and vitamins and baked from 85% flour, and by encouraging the extensive production of potatoes as well as other vegetables. Provision of these two sources of food on an unrationed basis, as borne out by British experiences, actually establishes a calorie-free system and thus removes the most dangerous aspect from nutrition planning. It is only through such measures that there can be latitude in planning and an active recognition of the importance of food nutrients.

In addition to unrationed bread and potatoes, it is of prime importance that there be available 4 ounces per person per day of leafy green and yellow vegetables, especially with long-term restricted diets. Besides increasing the nutritive value of the diet, this quantity of vegetables will provide flexibility and interest, with resultant good psychological effects. Provision of this quantity of vegetables at an early date during emergency periods can only be achieved by stressing in an educational program the necessity of vegetable production, particularly in home gardens. Appreciation of this fact was one of the strongest points in favor of British success with their ration system.

Finally, to achieve the maximum psychological effects from a ration system, provision must be made to supply the population with sufficient fats and proteins. To supply these in the quantities desired is often difficult or impossible even during normal times (29). Its accomplishment, however, will be the final mark of a successful ration system.

## 7. Preparation and Distribution of Food

The end objective of all nutrition planning must be the preparation and distribution of food to the populace. Upon the achievement of this objective will depend the ultimate success of the plan as a whole. Under emergency conditions, mass feeding will provide the most practical approach to the problem. Lack of adequate provision for mass feeding may mean failure of the entire program. To avoid such failure particular emphasis must be given to:

- a. The supply, transport, purification, and storage of sufficient potable water for cooking, cleaning, and drinking purposes.
- b. Provision of all necessary equipment and facilities for the transportation, supply, distribution, preparation, and serving of food. Emergency field preparation planned on a basis of 100 person units has proven eminently satisfactory for such purposes. Studies might very well be initiated to investigate the possibilities of providing light-weight, mobile units capable of being moved by motor, train, or air. Such mobile units should be planned on a basis of 100-persons per unit, but groups of 1,000 persons should be the basis for emergency planning.
- c. Provision of trained personnel for the operation of all facilities involved in mass feeding operations.
- d. Institution of scrupulous sanitary measures in the supply, distribution, and preparation of food.
- e. Provision for adequate holding and storage facilities for left-



over prepared food. The epidemiological significance of this factor must be recognized, particularly in areas of warm climate. The safety of the peoples being fed may well be imperiled by neglect of this relatively minor consideration. It is infinitely more desirable to destroy or distribute extra food than to hold it under inadequate circumstances and thus invite food poisoning or other gastro-intestinal upsets. During World War II there were repeated examples of the results of such neglect. Because of the age distribution, the problem would be even more acute among civilian population groups.

Armies in the field have probably provided the best proving grounds for measures which must be taken to carry out successful mass feeding programs. Simplicity, speed, and efficiency under varying conditions are the principles which govern the United States Army's approach to the problem. These principles are embodied in the following publications, which can be of invaluable assistance in the resolution of the many difficulties which will arise in the conduct of such an operation:

<u>Publication</u>	<u>Title</u>	<u>Date</u>
FM 21-10	Military Sanitation	31 July 1945 (also 1940)
FM 21-11	First Aid and Field Sanitation for Soldiers	1 August 1946
TM 10-405	The Army Cook	28 August 1946 - C1
TM 10-410	The Army Baker	18 April 1945
TM 5-295	Water - Supply and Purification	22 August 1945

#### 8. Supplemental Feeding

During times of stress, supplemental feeding will be required for certain of the population groups which are more vulnerable under the exigencies of the situation. These can be classified as follows:

- a. Infants and children 0 through 14 years of age
- b. Pregnant women and nursing mothers
- c. Industrial and other workers (including "working mothers")
- d. Hospitalized, institutionalized, and aged persons.

Provision for supplemental foods for all of these should be a primary consideration. Among them, however, one group--"working mothers"--deserves a special word. Ordinarily this group is made up of mothers of children ranging from a few months to 14 years of age. The pattern of human behavior dictates that these mothers will share their food with their children, with detriment to the working mother. The factors of emotional concern for their children, the burden of carrying on a job, and insufficient time for their personal care produce a population group which will be among the first to show signs of deterioration. If particular attention is paid to their needs, not only may the hazard to such mothers be reduced but the group will furnish a significant index of the nutritional trends in the population.

In planning for food supplements certain basic considerations arise. One of the most difficult of these to resolve can confront the responsible authorities at any time during an emergency in the event of a limited food supply available for supplemental feeding. Which of the above groups shall have precedence in the distribution of these limited supplies? This question can only be answered in terms of the role of each group in the overall picture of our survival as a nation.

Obviously, it will be incumbent upon those responsible for the total nutrition picture to insure priority supply of fresh, canned, and powdered milk for the feeding of infants and children. Distribution to other groups requiring supplemental feeding will, of course, depend upon availability.



The primary aim of supplemental foods is to provide needed calories and nutrients to persons having special requirements. In addition, however, supplemental foods have a psychological value of tremendous importance. These two aspects of the problem of supplemental feeding will require that those administratively responsible approach the matter with certain requirements in mind.

Whether for physiological or psychological purposes, food to be supplied must be in the form best suited to the circumstances. It is obvious that foods which can be taken home and shared with the family will most nearly achieve the maximum results (48).

The very nature of the groups most needing supplemental foods makes obvious the fact that such foods should be of high nutritive value (11). To accomplish their purpose, however, they must not be perishable or otherwise difficult to store or transport to the point of consumption. It may be noted in the latter connection that serious difficulty developed during the early occupation of Japan, when new and strange foods were offered to the Japanese people (49). Too, an additional problem was created when these new foods, requiring longer cooking time, were supplied in this area where there was a serious fuel shortage.

As psychological tools, supplemental foods can have adverse as well as favorable effects. These probably cannot always be avoided. With the idea of achieving the greatest good from such supplements, however, two important factors should be kept in mind. When supplemental foods are provided in the form of meals, quality must be a prime consideration. Hot foods must be served hot; cold foods served cold. It is imperative also that, ~~in so far as possible~~, supplemental foods provided should be in keeping with religion (43), taboos, and native food habits (48) (50).

Although the very concept of planning for emergency conditions would seem to make it unnecessary, it seems wise to point up the fact that a supplemental feeding program can achieve its purposes only if actual need for such food is determined before distribution is made. Moreover, the danger of creating special-privilege groups under such a program is always present. The social and industrial unrest which inevitably result from such a situation were all too apparent when supplemental food was supplied to railroad workers as a particular group early in our occupation of Germany (51). Similar difficulties resulting from this type of assistance confronted the French in the mining areas in 1944-1945 and the British in the Ruhr area in 1946-1947 (48).

Also vital to a successful supplemental feeding program are the time, method (43), and place (48) of distribution. In the location and operation of distribution points, care must be exercised to avoid causing the recipients of the food unnecessary inconvenience, loss of working time, expenditure of energy, or adverse psychological effects. As an incentive for increased industrial output, supplemental foods in the form of extra meals at the place of occupation should be provided wherever possible. The desirability of this is even more enhanced during periods of inclement weather or fuel shortage.

In many cases it will be desirable and possible to charge some fee for supplemental foods. In this event, however, the purposes inherent in the provision of such foods can be defeated unless care is taken that prices can be met. Because supplemental foods are often the more desired or even luxury-type-items, high prices might too easily result in an excessive expenditure of available funds on these foods to the neglect of the necessary basic ration. In the occupation of Japan we have an example of the far-reaching effects of such a situation (49) (12). There the cost of the basic ration was not excessive in the light of average earnings. The basic ration, however, was insufficient for normal existence. The inevitable result was to force individuals to purchase on the black market additional foods which actually provided but one-third of their caloric consumption. It is of record that in many instances 80% of an individual's total earnings were required to provide this extra one-third of the food he required.



## 9. Industrial Feeding

The successful prosecution of a modern war demands of workers an efficiency and an ability to produce requiring tremendous energy. In the maintenance of such an output, psychological as well as other factors play a great part (50).

The relationship between nutrition, good health, and industrial efficiency cannot be ignored. In the event of an emergency, the importance of this relationship will be amplified a thousandfold. In this may lie the difference between victory and defeat, recovery or decline. An emergency nutrition program, therefore, cannot fail to take into account the vital importance of an industrial feeding program.

Efforts to date in this field have only touched the surface of advantages which can result from an industrial feeding program. Many and varied studies can be made to bring us closer to a maximum yield. Among these, research into the following aspects of the subject is recommended:

a. The effects of nutrition on physical and mental fitness in all age and sex categories, under normal conditions and under conditions of industrial stress (51) (52).

b. The effects on industrial production of time of meals, consumption time, heavy meals, missed or scant meals, and on-the-job, between meals supplemental food. In this connection, of particular importance are the effects of over-nutrition on production (53). To over-feed industrial groups at the expense of others is false economy. In addition, evidence would seem to indicate that over-feeding slows down production. We might emphasize here again the contention of Wilder and Keys that the population of the United States as a whole is normally over-fed and could profit by a 10% reduction in food consumption.

c. The home-life habits and nutrition of workers' families. The most elaborate in-plant program can be defeated by adverse influences in the home. Heavy industries, such as coal mining and steel, are of particular importance in this respect.

d. The types of food which will produce the maximum efficiency in workers on specialized jobs. The requirement of particular optical efficiency or the presence of unusual eye strain, for example, can be compensated for to some extent by foods high in Vitamin A. Indications are, however, that the effects of nutrition on optical efficiency are much more extensive and deserving of investigation. Similarly, great heat and excessive sweating require increased quantities of proteins, salt, Vitamin C, and fluids.

e. The protective effects of nutrition on susceptibility to industrial poisons and other industrial hazards. (52)

In the institution of a program of industrial feeding there are many pitfalls which must be circumvented, as historical experience shows. Both the workers and the operators alike must be educated as to the importance and value of industrial feeding and the need for cooperation in such a venture.

A major factor to be considered in establishing food supplements as production incentives is the type of work being done, including the time spent on the work. An excellent example of the importance of this consideration is furnished in the case of the Belgian coal miners who went on strike during the critical Ardennes campaign (36). Their claim was that they received insufficient food to maintain working strength. Investigation disclosed, however, that because of a shortage of materials, their actual working period was but three hours a day. In actual fact, the food consumption as determined for these workers was adequate for the energy expended. Their actions were motivated simply by a desire to obtain supplemental foods to take home to their families.



The aspect of industrial feeding has a large place, too, in planning and constructing new plants. It is paramount that its importance be instilled in the minds of both plant designers and operators before construction is commenced. By so doing, adequate facilities will be assured, with a resultant economy of time, materials, and food (13).

In the conduct of industrial feeding units, the results in great measure depend upon the operating personnel. Inexperience must not be tolerated. Experienced personnel, trained in the purchase, preparation, and serving of large quantities of food are necessary to success. Smaller plants, which would find the employment of such personnel an unreasonable expense, can solve this problem by sharing personnel with other like plants. Professional catering services on a contract basis also can provide an economical solution where plant operation of such a program is exceptionally difficult or not desirable.

In some industries there will be particular problems related to food habits, variety, methods of preparation, and quantities of food (50). The dissatisfaction evidenced in the lumber industry over unsatisfactory food situations is a notable example of this.

Finally, it is to be noted that most of the principles applicable to supplemental feeding in general must be considered in establishing an industrial feeding program.

#### 10. Historical Records

To future generations we have one final responsibility in establishing a nutrition program.

In order that adequate records may be available by which those who come after us may profit, it is of the utmost importance that provision be made for trained and equipped units, available at the onset of an emergency to photograph and otherwise record the sequence of events as they occur--their causes, effects, scope, and any other data that may be important for future evaluation of the circumstances. Such units should be composed of observers trained in varied fields.

To verify the importance of such groups, and of their early presence in the area of emergency, we can point to the value of the findings and reports of the Strategic Bombing Survey in Europe (2) and the observations made at Nagasaki and Hiroshima (1) (3).



## PART II

### The Role of Nutrition During World War II

#### A. Introduction

The true national interest can best be served not by designing blue-prints of the future, but by learning the lessons of experience. The problems involved in the attempt to insure adequate nutrition for all peoples are many and varied. There is no better approach to their solution than a review of the recent and still vivid experiences of World War II. To the solution of future dilemmas we can apply the principles thus revealed. To this end, a brief documented resume of the history of Nutrition in the European Theater of Operations during World War II is here presented.

Before attempting an account of the development, organization, and accomplishments of the nutrition program, an understanding is necessary of the status and relationship of the public health program in the European Theater to the various Army commands. A diagram is presented to show the various organizations and their periods of existence, and to give an indication of their relationships to each other. Throughout this discussion the respective command organizations are referred to by their official abbreviated titles, e.g. SHAEF, USFET, OMCUS, etc.)

#### B. Prelude to a Nutrition Program

The Public Health Branch, G-5, SHAEF, which physically originated in Bushey Park, England, ten miles from the center of London, historically was the first public health group ever to become a part of an American Army. It was organized on 7 May 1944, when a senior officer of the United States Public Health Service was loaned to the Army and assigned to SHAEF as Chief of the Public Health Branch. At that time several other specially qualified officers were also assigned to assist in the organization of the Branch. Among them was an officer who was designated as Chief Nutrition Consultant.

From this small consultant section, having only one officer on a temporary status, the nutrition program in the European Theater was developed. Although SHAEF was essentially a joint allied operation, only United States officers and personnel were involved in the official formation and functions of this program.

On May 25, 1944 the foundation of the nutrition program for the European Theater was laid by the Deputy Chief of the Public Health Branch and the Chief Nutrition Consultant. The task confronting them involved the development of a basis for solution of a problem which was then of unknown proportions. Its anticipated magnitude was difficult to convey to those in command positions, who at that time were concerned with actual combat activities and did not visualize the extremely vital role nutrition was to play in the overall allied operations in the near future.

The next step in the growth of the program was the assignment of two additional officers to SHAEF on TDY status to act as consultants on nutrition problems. These two officers made up the first "Pilot Nutrition Survey Team". This was the nucleus of the eventual large, well organized operational section consisting of five trained Nutrition Survey Teams whose primary function was to conduct studies of the German civil population throughout the United States Zone of Germany. Later a sixth team was also organized and trained by SHAEF and at the request of USFA was transferred to that command to conduct similar studies of the Austrian civil population.

The basic concern in early planning was to establish liaison with British officials and scientific groups, and with similar representatives of France, Belgium, and the Netherlands. The major problems to be considered were with respect to insuring a supply of food in sufficient quantities to maintain a fair state of health in the liberated countries. Actual supply was, of







course, a function of the Quartermaster and the countries themselves; but it was necessary that specialists trained in the fields of food, agriculture, and nutrition should designate the quantities and types of food that were desirable under the attendant circumstances.

Prior to D-Day general plans included food composition tables and outlines of survey procedures. Outstanding British experts in nutrition assisted the SHAEF Nutrition officers in certain phases of the planning, and liaison with experts in this field in all the countries concerned was maintained at all times.

After D-Day and the arrival of the Public Health Branch of SHAEF in France, closer liaison with the French Public Health and Nutrition authorities was established and subsequently maintained.

From the beginning, the crux of the difficulties confronting the Nutrition Section was "selling" a nutrition program to higher authorities. Nutrition was looked upon as simply a Quartermaster feeding problem. Obviously, then, it was difficult to convey the need for a system of nutrition surveys and detailed surveillance, and for the establishment of nutrition standards.

As part of the selling program there was developed "A Detailed Plan for Nutrition Survey" (20 October 1944, Headquarters SHAEF). After pilot studies based on this plan were conducted in Paris, more interest was paid to the possibilities of further such observations to provide a basis for future action.

This was but a small step forward, however. When the Deputy Chief of the Public Health Branch, SHAEF, made a trip to the United States and, with the cooperation and assistance of the Chief of the Nutrition Branch, Division of Preventive Medicine presented the problem as it appeared in the field, the interest of The Office of the Surgeon General was aroused in supporting a well organized nutritional program for the European Theater of Operations.

As a result of this presentation, suitable and well trained personnel eventually were made available for the establishment of a large scale program. It is interesting to note, however, that sufficient numbers of well trained individuals were not available within the ranks of the Army, making it necessary to draw upon expert nutrition consultants from the various medical schools and organizations throughout the United States to provide a nucleus for this group.

The results obtained from the establishment of this organization can be seen in the tremendous quantity of data obtained regarding the state of nutrition of the populations of the liberated countries and of the United States Zone of Germany. These data represented the only factual evidence on this subject available to higher authorities upon which they might base plans, policies and decisions relative to problems in nutrition and public health.

### C. The Developing Program

The period under the original establishment on 15 May 1944 of the basic Nutrition organization in the European Theater of Operations was one of orientation, planning, and determination of the type of program to be conducted.

In collaboration with representatives of the "Combined Working Party", a study of food values was conducted and a table of values agreed upon. These figures were used by both American and British authorities in the computation of needs of the liberated countries. It is important to note that these tables were compiled on the bases of anticipated types and conditions of food to be found on the continent if and when the allied forces landed. These were not the highest food values. They did, however, represent the most desirable figures for the indigenous food supply that was anticipated to be found on the continent, and were used in subsequent calculations of food supply and consumption. It is of note that these were extremely conservative figures, actually representing low rather than mean or optimal values, and authorization of their use was an important policy determination.



Prior to D-Day, in addition to planning and liaison activities, experimental surveys were conducted in collaboration with the British authorities, particularly the Oxford Nutrition Survey Group, to work out certain details in connection with handling large numbers of people and also to establish a uniform method of interpretation in future activities. Perhaps the most important development arising from this cooperation was the drawing up of a clinical form (18) and a glossary of clinical signs and symptoms. These were included as part of the SHAEF plan for nutrition surveys, previously mentioned. By this means, uniformity in interpretation was facilitated when the British and the American forces assumed their respective responsibilities.

The wisdom of this early appreciation of the need for uniformity was evident as the tempo of activities increased after D-Day. This need for uniformity is equally important to keep in mind in the consideration and development of a nutrition program for use in the event of a future emergency if the data compiled is to be of any value.

During the early period of planning and orientation certain directives, memoranda, and correspondence had an important bearing on later developments. Because of their importance these will receive special mention in this discussion.

The earliest of the communications referred to is Technical Instruction No. 25, Distribution and Rationing of Food, 15 May 1944, from 21 Army Group to ECAD. With a supplement dated 2 June 1944, it laid down the measures to be taken in connection with operation OVERLORD--our invasion of France and the low countries. It contained a complicated set of tables covering the conversion of foods and food substitutions, and set up ratios having as an objective 2,000 calories per person per day, to include 70 grams of protein per man per day for adults. The basis of these early figures remains obscure, but they represent the first attempt to establish data of this type of a reasonable nature.

During this early period it was realized as stated in a letter from the Oxford Nutrition Survey Group to the British Member of SHAEF Public Health Branch that a reduction or increase of the ration to 2,000 calories would depend upon "anticipated stocks and future production over a given period, quantities of commodities that can be made available for deficiency over this period, and quantities and types of commodities imported from the US/UK that can be made available during this period." In this letter reference is made to discussions with the Chief Nutrition Consultant and other of the United States group for the purpose of formulating plans for "rapid surveys under Army auspices to guide the distribution of food to the civilian population in Europe." This was the first definite step to be taken with respect to the European Theater and it established firmly our early cooperation with the British nutrition groups.

In a letter dated 19 June 1944, from the Chief Nutrition Consultant SHAEF to the Office of the Surgeon General former stated "the program for nutrition grows slowly." He outlined the proposed composition of a nutrition survey group: "a clinician, a dietary expert (non-medical nutritionist), and an aide." It was planned, he added, that these groups would make "a cursory survey of the population rather soon after a city or area that shows indications of food difficulties is uncovered." It was further proposed that they "would be called up at the request of Army Headquarters level."

It is apparent from a review of the records that food policy during the period of the French invasion at least was primarily concerned with estimates of food stocks on hand, import requirements, organization of control of agricultural production, and organization of food collection, processing, and distribution (including trading policy). Only when the SHAEF Public Health group entered the picture was a more practical field approach taken and the true condition of the health of the people acknowledged as being a matter of primary concern.

Following the expression of United States concern regarding the public health aspects of food policy a communication "CWP on European Food Supplies--



Terms of Reference"-Dec. 11 (C.C.), was issued stating --

"Upon the establishment of such general aims and policies, it is then required that the nutritional status of the civil populations be determined in order to check the practical functioning of the aims and policies in terms of results and also to maintain check on presence and degree of nutritional deficiency from the point of view of national health and welfare."

Certainly these same principles and approach are mandatory in establishing a program of medical defense on a national scale for the United States.

There are differences to be considered, however. Warfare as waged in Europe was a campaign of strike and divide, with the eventual unification of entire populations and countries on liberation. In the anticipation of atomic, or other types of warfare, we must realize that isolation of large or small groups of people may result from enemy attack. Survival might well be on the basis of the autonomy of such groups. As previously stated, the establishment of a 2,000 caloric dietary World War II was dependent upon both internal conditions as they were found to exist and upon external factors, such as transportation, supply, and availability from other sources. In total war, internal factors alone will decide the issue. It is in anticipation of such an eventuality that these lessons of experience must be acknowledged.

The general scope of nutritional investigations was rather well determined as indicated by the text of the letter of that date 4 August 1944, from G-5 Division, SHAEF, to the Oxford Nutrition Group. Cooperation between the interested groups had been the rule up to this time, and following numerous conferences meetings, correspondence, and a great deal of actual work on the part of the SHAEF group, a workable and acceptable plan was finally produced.

Many were the pitfalls ahead, however. Memorandum dated 5 August 1944, from the Chief, Public Health Branch to the Chief Nutrition Consultant (Staff Minute Sheet, SHAEF, G-5, SHAEF/PH/706), laid down the policy that --

"Any nutritional surveys that may be undertaken must necessarily receive prior approval by the military commander in whose area they are to be conducted."

This policy, while true to military procedure, caused untold difficulty during later stages of the program and was the basic reason for delay in developing uniformity of surveillance. It left the development of nutrition activities up to the respective commands, some of whom thought such activities a waste of time while others did their utmost to establish good programs in their areas.

In addition to delaying the development of uniform activities, this policy directly contributed to a poor state of morale among the nutrition personnel involved. Survey groups were assigned to the respective areas and commands. Early command planning did not include such organizations or personnel as Nutrition Survey Teams. The result was difficulty in T/O assignment, and in the procurement of equipment, quarters, rations and gasoline once the group left the headquarters where they were known. Promotions too, were practically unknown among these groups of highly trained individuals, most of whom were M.D.'s or Ph.D.'s.

In a communication to the Nutrition Branch in the Office of The Surgeon General of the Army in Washington, D. C., the Chief Nutrition Consultant of SHAEF had indicated that unless public health agencies were careful, they would miss the very important part which nutrition plays in public health programs. In response in a letter dated 17 August 1944, the Chief of the Nutrition Branch, Office of The Surgeon General stated a desire to assist and cooperate, but indicated that the primary concern of the Nutrition Branch was to establish general principles:



"\* \* \* We are, of course, interested in the European and near-by countries. We are also interested in other parts of the world \* \* \* and that is why we are so anxious to get the general principles accepted."

Seven days later--24 August 1944--Paris was liberated and there was need for expert nutrition advice in that area. Fortunately, the area command had anticipated the need and action was ultimately taken at the area level.

A communication from FWD SHAEF to Public Health Branch, SHAEF (Staff Message Control, SHAEF FWD, Reference No. FWD 13157) had recommended --

"Temporary assignment of a team of nutritionists to Paris area to survey and recommend action relating to nutrition problems."

By 24 August 1944, plans and policies had reached the stage where it was feasible and desirable to form a nutrition team and start work. But again, administrative delay caused an impasse. While Paris was looking for surveys, and those concerned were ready and anxious to put to test plans laid earlier, SHAEF consultants, including the nutrition consultants, were sent from London to Manchester, England, on administrative orders so that they might travel to continental Europe with the Civil Affairs Division. There followed a period of 30 days during which ten consecutive messages were sent by forward echelons asking for nutritional advice and assistance while the consultants, who reached the outskirts of Paris after much delay, awaited necessary orders to allow them to enter the city and commence work.

Following dispatch of a memorandum, dated 3 October 1944, Subject: Paris Food Supplies, from Chief Public Health Branch to Chief, Supply and Equipment Branch G-5, FWD (SHAEF Coordinating Route Slip), a study of the Paris situation was started early in that month. Two surveys were conducted as a check upon the methods used and on 11 January 1945 a combined survey report was submitted. A nutrition consultant of the United States Public Health Service assisted in the second survey and concurred in the methods used. It is of note that the basic method and principles used at that time were contained in use throughout the remainder of the nutrition activities in Europe, and at the present time the United States Public Health Service is using these methods and approach, with only slight modifications, in surveys of various sectors of the United States.

As indicated previously, some administrative delay was encountered in the beginning in obtaining personnel to carry on the nutrition program. The Chief, Preventive Medicine Division and the Chief, Civil Public Health Branch both of the Office of The Surgeon General, submitted a memorandum dated 20 Sept 1944 concerning the desire of The Surgeon General for information on the nutritional status of the populations of liberated and occupied countries and pointed out the necessity for certain actions to be taken. It was further suggested in this memo that a member of the G-5 Public Health Staff SHAEF visit the United States to discuss these and other public health matters. As a result, a senior officer of SHAEF, G-5 Public Health Staff was sent to the Office of The Surgeon General for this purpose.

During the interim, however, under the joint auspices of the Civil Public Health Division and the Nutrition Division of the Office of The Surgeon General a conference of nutrition authorities was called in Washington, D. C. on 15 August 1944 relating to the nutrition of civilian populations in allied, liberated, and occupied countries. From this conference several recommendations originated, concerning measures to be taken to investigate the nutritional status of the populations concerned.

As a result of these recommendations, Nutrition, Office of The Surgeon General, submitted a partial plan for surveys, "Outline of Procedure for the Nutrition Survey of Civil Population." This embodied some of the aspects put forth in the SHAEF plan, previously mentioned, but as a whole it was not as practical and reflected lack of experience in the field. It did, however, serve to stimulate further administrative action.



A memorandum was dispatched on 10 October 1944, from the Chief, Public Health Branch, to ACOS, G-5, SHAEF, Subject: Nutrition Surveys stating strongly the need for action:

"Recommended that in view of developments that ACOS G-5 direct immediate necessary action to facilitate surveys in Paris, Brussels, and such other places in Northwest Europe as may be necessary \* \* \*"

This provided the needed official backing for the work which could be done at that time and also established the precedent for the subsequent freedom of movement of nutrition survey teams, a freedom that was essential to the successful accomplishment of their mission. This establishment of proper authority provided the basis which enabled the future activities in the field of nutrition to reach their full scope.

As a result of this recommendation it was also possible to enlist the cooperation and assistance of the respective native medical groups in the liberated and occupied countries, beginning with the first Paris survey and continuing to termination of such organized activities. Throughout the work in France, Belgium, and the Netherlands this procedure was religiously followed. Later, in Germany, similar cooperation and assistance was obtained from the native medical personnel with excellent results. In 1946, for example, when it became desirable to discontinue surveys by organized United States teams, German medical teams which had been trained along side of American teams and were familiar with what the United States authorities expected of them were able to carry on the program with the advice of the latter and under supervision of German public health authorities. In the final analysis, this assistance contributed greatly to the results achieved, and plans for future programs in nutrition should emphasize that recognition of local medical personnel is of high importance.

One of the most important directives issued during this period was a memorandum, 25 January 1945, Subject: Control of Distribution and Rationing of Food in Germany, signed by The Adjutant, General of SHAEF (AG 400-7 Civil-GE-AGM). It established the general principles governing the distribution of food in Germany. It confirmed the responsibility and authority of the Military Government. It prescribed that German authorities were first required to provide food on a priority basis for United Nations Displaced Persons. Further, it established a most important factor:

"Levels of food consumption by the German population will not exceed those obtaining in liberated territories in the zone of responsibility of the Supreme Commander."

This important aspect must be kept in mind in the event of future occupation of foreign territory. Because of the importance of this directive, it is included in this report as Appendix III.

To point up the trend at that time, however, the recommended ration scale set forth in this directive is shown below:

"Except as stated in paragraph 3e (of the directive), the maximum allowances of rationed foods in calories per person per day that German authorities will permit for various consumer categories in the German rationing system are as follows:

<u>Consumer Group</u>	<u>Calories from Rationed Foods</u>
Under 3 years	1,000
3 to 5 years	1,250
6 to 9 years	1,600
10 to 17 years	1,750
Expectant (last 5 months) and nursing mothers	2,700
Normal consumers	1,550
Heavy and night workers	2,250
Very heavy workers	2,800



That these levels were feasible is borne out by the fact that when and where they were maintained no deterioration of the population occurred. Only when the levels fell below these suggested figures was there evidence of difficulty. It must be remembered, however, that these levels apply only when additional indigenous foods are available. If these levels were to constitute the only food available, immediate difficulty would be experienced (46) (47).

Administrative impetus for the nutrition program was provided when the Deputy Chief of the Public Health Branch, SHAEF, visited the Surgeon General's Office on 15 February 1945 for the purpose of furthering the objectives of the Branch by obtaining administrative backing and personnel to conduct a broad scale program. This visit gave needed information and support to the Nutrition Branch of the Surgeon General's Office, and as a result sufficient personnel were promised to carry out the nutrition program envisaged.

The subject of personnel deserves additional special mention. As previously recorded, because of the lack of suitable, well trained personnel in the ranks of the Army, it was necessary to call upon civilian experts from medical schools and other civilian institutions to serve on TDY status (average 90 days) until sufficient military personnel could be obtained, oriented, and trained to carry on the nutrition program. The obvious inconvenience and inefficiency of such an operation should be adequate warning that in the preparation of a specialized program a primary concern must be insurance of a source of well trained personnel. If such personnel are not already available, a training program must be part of organized planning.

With the guarantee of sufficient personnel and their immediate movement to the European Theater, fulfillment of early plans became possible.

The first Nutrition Survey Team was sent to the Netherlands. After a survey of conditions there, they joined the remainder of the personnel that had by that time arrived from the United States and the various teams were set up, consisting of a Clinician, a Nutrition Officer, a Biochemist, and a driver-assistant. This team composition proved most adequate and satisfied all concerned.

On 2 April 1945, a directive Subject: Nutrition Programs and Reports, from Headquarters SHAEF to All Headquarters and Commanding Generals in Northwestern Europe (AG 014.1-3, GE-AGM,) was published through all command channels as the result of the realization that a nutrition program was of extreme value to command authority. It directed Civil Affairs Military Government Public Health officers to observe and determine the nutritional status of civilian populations, recommend to their commanders the necessary civilian dietary, and make periodic reports to higher headquarters as outlined for "Civil Affairs Military Government (CAMG), Public Health Technical Operations", 24 August 1944, paragraphs 4f, g, and h.

This directive pointing up the obligations and responsibilities of the Public Health authority is an example of the type of instruction which should be part of any overall medical plan. In this particular case the instructions could well have been strengthened by the publication of an official operational directive containing a complete section on nutrition.

The Period under USFET, following the allied victory, SHAEF was dissolved on 14 July 1945, and command passed to USFET and the respective Army commands. Up to this time survey personnel had been maintained on a TDY basis from SHAEF. After the dissolution of SHAEF, however, the teams were assigned to the respective Army medical staffs. As indicated earlier in this account, much difficulty arose as a result. For example, delay was encountered in obtaining team survey reports for incorporation into a general monthly summary. This summary represented the only factual data available then to the respective commands and therefore was of great importance. Again, it cannot be emphasized too strongly that administrative responsibility in any nutrition program must include the establishment of personnel on a basis to provide for direct control and a centralized system of reporting so that, when desirable, data from various regions can be consolidated readily.



With the progressive organization of the functioning program in Europe, the necessity for additional directives became apparent. The need for central control for the respective commands on the various problems that developed became obvious as data was made available. Certain of these directives and communications which originated in Headquarters USFET can be of value in future planning. They are therefore commented upon in the following discussion.

One of the most important directives to be issued as an outcome of the nutrition program was that one dated 7 August 1945, Subject: German Civilian's Weights as Gauge of Nutritional Status, from Headquarters USFET to CG, Third US Army, Eastern Military District, and CG, Seventh US Army, Western Military District. Because of its particular value, it is included as Appendix IV to this report. It directs that through periodical check-ups the average body weights of the German civilian population be determined. Its special value lies in the ease with which these instructions could be carried out plus the extreme importance of the derived data. As a result of this directive an average of 80,000 persons were weighed each month in Germany. When these data were plotted on a comparative basis with the official ration and the estimated food as consumed, they provided a direct indication of the state of the population as a whole and also of special population groups. No large scale nutrition program should be organized without including a similar plan embodying these principles.

It is of interest that in the early period of "selling" and planning the nutrition program in Europe the value of body weighing was minimized by certain groups. Only after nutrition surveys were conducted and a limited number of weights (average 1,500 per month) were available was the true worth of this data recognized.

The basic directive providing for the feeding of displaced persons was the memorandum, 18 September 1945, Subject: Feeding United Nations Displaced Persons in Approved Camps and Centers in the U.S. Zone of Germany, from Headquarters USFET to Commanding General, All Forces in the ETO (AG 430) GEC-AGO. Criticism of it can be made on the basis that it provided a ration of 2,300 calories per day per person, which, when evenly distributed is in excess of need. This was particularly true in the case of these displaced persons inasmuch as supplemental foods were available and were obtained by them through diverse means.

An additional problem with respect to these displaced persons was that of administrative control. Three organizations simultaneously were trying to run the DP Camps -- the area commanders through their representatives; United Nations Relief and Rehabilitation Administration (UNRRA); and the local Military Government officials, who were "on the spot" to supply food and whatever else was needed or requested by either the area commanders, UNRRA, or Military Government itself.

In estimating the problems which will arise in the event of total war, it is imperative that planning encompass the possibility of a similar displacement of large numbers of people, with the resultant necessity of providing them with food and other requirements. The difficulties encountered in Europe in this connection certainly provide a springboard for the development of plans adequate to meet such an emergency.

A supplement to the directive cited immediately above is the memorandum dated 15 October 1945, Subject: Special Ration in the U.S. Zone of Germany for Persons Persecuted by the Nazi Regime, from Headquarters USFET to Commanding General, All Forces in the ETO (AG 430) GEC-AGO. It points up another type of problem that may arise in the event of war and the subsequent displacement of large groups of people. By this directive a special ration was provided for a select group. Although arising from a humanitarian impulse, this proved to be a dangerous procedure. It resulted in bad feelings between the individual displaced persons themselves and between them as a group and the indigenous population in the exploitation of available food supplies, and in difficulty in accomplishing the rehabilitation of an assorted group of people.



Interesting in the light of our discussion is a publication, Subject: Emergency NMAF Treatment for General Medical Use, from 21 Army Group, Civilian Consultant Group (Medical Research Council, London, resulting from special studies by the British.) During the period prior to VE-Day the nutritional state of the civilian population within the B2 area of the Netherlands, then still in German hands, was the source of much concern. Reports received toward the end of hostilities indicated an average dietary in that area of around 400 calories per day per person. Widespread starvation was expected as a result. The British therefore carried on extensive studies with respect to the use of protein hydrolysate, to be given by mouth to persons too weak to eat normally. In theory, this method of supplying proteins sounded excellent. When put into practice, however, it proved to be of little value. Primarily, protein hydrolysate was unpalatable and difficult to retain. Secondly, individuals who were able to take hydrolysate by mouth fared even better when given cereals, gruel, flour and water, or any combination of these, with as high a content of sugar as possible. The lesson to be derived from this experience needs no further comment.

An attempt at a late date to postulate standards of minimum nutrient requirements, as advocated by the Allied Control authority was contained in a memorandum, 23 October 1945, Subject: Standard of Minimum Nutrient Requirements, from Headquarters USFET to Directors of the Offices of Military Government for Bavaria, Western District, and Berlin District, (GEC FH 720.1). This directive is included in its entirety in this report as Appendix V. Interesting is the fact that by its issuance the need for such standards was acknowledged exactly one year following the publication by SHAEF of its "Detailed Plan for Nutrition Surveys" (20 October 1944). In this directive the establishment of the 2,000 calorie level for normal consumers was reaffirmed, but the levels postulated by SHAEF in its directive of 25 January 1944 were raised.

The type of instruction vitally necessary to the establishment of responsibility in the planning of an operation is illustrated in the memorandum, 2 November 1945, Subject: Delineation of Supply Responsibility, to all Commanding Generals, Commands in ETO, Austria, Missions, Ground Forces, Air Forces, etc. (AG 4000 GDS-AG)). Because of its importance it is included in full in this report as Appendix VI. In a simple and direct manner its purpose is stated:

"In order to clarify supply responsibility for the furnishing of food and Class II and IV Quartermaster items to displaced persons, prisoners of war, disarmed enemy forces, and other categories of non-U.S. military personnel, all concerned are advised that responsibility to and sources of supply for the various categories for which the Theater Commander is responsible are delineated below \* \* \*"

Included as Appendix VII this report is the memorandum, 10 November 1945, Subject: German Civilian Weights as Gauge of Nutritional Status, from Headquarters USFET to Commanding Generals, Eastern and Western Military Districts (AG 720 GEC AGO). It emphasizes the contents of the letter of 7 August 1945 on this subject. In addition, it sets forth a slight revision in procedure. Both this directive and the letter referred to constitute valuable precedents upon which future plans may be based.

The value of the directive of 16 January 1945, Subject: Food and Feeding Responsibilities in ETO, to All Commands in ETO, Austria, Air Forces, Military Government Ground Forces (AG 430 GEC-AGO), which amended directives of 2 November and 16 November 1945, lies in its clear definition of feeding responsibilities. The particular worth is the precedent of that directive as it stated and designated responsibility and authority for this task. See Appendix XI,

The value of and need for efficient nutrition surveys is reflected in a statement in the directive of 14 February 1946, Subject: Inspection and Control of Food Rationing in US Zone of Germany, from the Commanding



General, USFET to Directors of the Offices of Military Government of Bavaria, Greater Hesse, and Wuerttemberg Baden, that --

"Recent inspection by nutritional teams of the Public Health Branch, Office of Military Government (U.S. Zone) indicates that German Civilians are receiving food rations considerable in excess of the officially authorized ration scale. The United States Government has undertaken to supplement indigenous German food supplies by importing the necessary food to supply a 1550 calorie ration scale." (Appendix VIII).

This communication further directed that steps be taken to stop illegal traffic in and consumption of rationed food in the respective areas.

Included as Appendix IX to this report is the text of the directive of 30 March 1946, Subject: Ration Scale for Feeding of German Civilian Internees, from (MCNarney) to Commanding Generals, Third US Army Area, Berlin District, Commanding Officer, Bremen Port Command (thru CG Continental Base Section) (AG 430.2 GEC-AGO), related to the responsibility of feeding German civilian interness. Earlier neglect of this group required that the attention of command authority be drawn to their responsibilities for the welfare of these people held under our custody though not in time of war. The memorandum cited was an attempt to draw up a directive in a form capable of interpretation by untrained individuals. As a result there was established a sample ration including certain designated foods to supply 1,700 calories per person per day plus any supplements that might be required for internees on full time jobs.

Two points are noteworthy in connection with this directive. First, it recognized the necessity for clarity and simplicity in order that correct interpretations might be assured. Secondly, the need for its issuance points up the possibility of neglect of feeding and nutritional responsibilities remaining even after an emergency period has passed.

#### D. The Problems of Personnel & Equipment

That the nutrition program succeeded at all is the more remarkable when one considers the constant administrative difficulties which confronted those responsible for its accomplishment.

Once proper command authority became aware of the importance of the program, the Office of the Surgeon General gave full support to the repeated requests for personnel to carry out the plan as proposed. No early provision was made, however, for teams of this type in any Tables of Organization (T/O). Similarly, there were no Tables of Equipment (T/E) for such groups at any level of authority. This condition persisted up to the time when personnel were trained and organized into teams and these teams had been assigned to the various Army Headquarters medical groups.

Make-shift procurement of necessary equipment was the inevitable result of this lack of planning. Reconditioned vehicles and ambulances provided transport. Equipment had to be obtained without official sanction and from captured enemy supply dumps. Even more acute was the problem of billeting, rations, and gasoline, as previously mentioned.

Numerous unsuccessful attempts were made to have included in Military Government operational plans a T/O and T/E for nutrition teams. Even to the present time the Military Government T/O and T/E dated 1 July 1948 (55) makes no such provision for this important aspect of preventive medicine. Unquestionably the omission is due to a lack of appreciation of the role that nutrition can play.



and the improbability of promotions, the personnel soon became dissatisfied. It was only with great difficulty that their efficiency and activities were maintained.

Reference is made to Appendix X of this report, setting forth the desirable composition of an effective Nutrition Survey Team and the equipment necessary to outfit such a group. From October 1944 through June 1946 when and where such personnel and equipment were available, they proved to be most efficient working organizations and this standard was maintained so far as possible throughout survey activities.

#### E. Tripartite Surveys

Starting on 30 July 1945, the first of a series of quarterly tripartite nutrition surveys of the United States, British, and French Zones of Germany were conducted. These surveys were initiated and planned by the United States Public Health group. The British and the French sent three officers representing the medical, nutritional, and agricultural aspects of nutrition on each of these missions. Invitations were extended on every occasion to the Soviet Government to participate, but on only one such survey were their representatives present. Even on this survey, however, only the United States, British, and French Zones were covered.

Those quarterly surveys provided opportunity for an exchange of ideas, establishment of uniformity of control and investigation, and--more important--gave opportunity through a combined report written at the termination of each trip for first-hand knowledge of the nutritional status of the respective areas. Enough emphasis cannot be placed on the value of the cooperation and advantages derived from these quarterly trips. Certainly the establishment of an extensive nutrition program in the future should embody a similar type of cooperation, whether between localities, states, countries, or continents.

#### F. The Role of Nutrition in the Future

This summary of the nutrition program carried on during World War II and an evaluation of the results of the program emphasize the necessity of establishing now a well planned program based upon experience.

Considering the achievements of this relatively unsponsored program built upon pioneer efforts, early establishment of a similar plan for future emergency would lend valuable uniform data relative to all the aspects of nutrition which, if unrecognized, can directly influence the national potential for survival in the event of total war.



APPENDIX I  
 RECOMMENDED DAILY DIETARY ALLOWANCES 1  
 Revised 1948  
 Food and Nutrition Board, National Research Council

	Calories 2	Protein gm.	Calcium gm.	Iron mg.	Vitamin A, 3 I.U.	Thia- mine, 4 mg.	Ribofla- vin, 4 mg.	Niacin (Nicotinic acid), 4 mg.	Ascor- bic acid, mg.	Vitamin D, I.U.
Man (154 lb., 70 kg.)										
Sedentary . . . . .	2400	70	1.0	12 (5)	5000	1.2	1.8	12	75	(6)
Physically active . . . . .	3000	70	1.0	12 (5)	5000	1.5	1.8	15	75	(6)
With heavy work . . . . .	4500	70	1.0	12 (5)	5000	1.8	1.8	18	75	(6)
Woman (123 lb., 56 kg.)										
Sedentary . . . . .	2000	60	1.0	12	5000	1.0	1.5	10	70	(6)
Moderately active . . . . .	2400	60	1.0	12	5000	1.2	1.5	12	70	(6)
Very active . . . . .	3000	60	1.0	12	5000	1.5	1.5	15	70	(6)
Pregnancy (latter half) . . . . .	2400 (7)	85	1.5	15	6000	1.5	2.5	15	100	400
Lactation . . . . .	3000	100	2.0	15	8000	1.5	3.0	15	150	400
Children up to 12 years <sup>8</sup>										
Under 1 yr. <sup>9</sup> . . . . .	110/2.2 lb. (1 kg.)	3.5/2.2 lb. (1 kg.)	1.0	6	1500	0.4	0.6	4	30	400
1-3 yrs. (27 lb., 12 kg.) . . . . .	1200	40	1.0	7	2000	0.6	0.9	6	35	400
4-6 yrs. (42 lb., 19 kg.) . . . . .	1600	50	1.0	8	2500	0.8	1.2	8	50	400
7-9 yrs. (58 lb., 26 kg.) . . . . .	2000	60	1.0	10	3500	1.0	1.5	10	60	400
10-12 yrs. (78 lb., 35 kg.) . . . . .	2500	70	1.2	12	4500	1.2	1.8	12	75	400



# APPENDIX I (CONT'D)

	Calories <sup>2</sup>	Protein	Calcium	Iron	Vitamin A, <sup>3</sup>	Thia- mine <sup>4</sup>	Ribofla- vin, <sup>4</sup>	Niacin (Nicotinic Acid), <sup>4</sup>	Ascor- bic Acid	Vitamin D, I.U.
		gm.	gm.	mg.	I.U.	mg.	mg.	mg.	mg.	
Children over 12 years <sup>8</sup>										
Girls, 13-15 yrs.										
(108 lb., 49 kg.) . . . . .	2600	80	1.3	15	5000	1.3	2.0	13	80	400
16-20 yrs.										
(122 lb., 55 kg.) . . . . .	2400	75	1.0	15	5000	1.2	1.8	12	80	400
Boys, 13-15 yrs.										
(108 lb., 49 kg.) . . . . .	3200	85	1.4	15	5000	1.5	2.0	15	90	400
16-20 yrs.										
(141 lb., 64 kg.) . . . . .	3800	100	1.4	15	6000	1.7	2.5	17	100	400

<sup>1</sup> Objectives toward which to aim in planning practical dietaries: The recommended allowances can be attained with a good variety of common foods which will also provide other minerals and vitamins for which requirements are less well known.

<sup>2</sup> Calorie allowances must be adjusted up or down to meet specific needs. The calorie values in the table are therefore not applicable to all individuals but rather represent group averages. The proper calorie allowance is that which over an extended period will maintain body weight or rate of growth at the level most conducive to well-being.

<sup>3</sup> The allowance depends on the relative amounts of vitamin A and carotene. The allowances of the table are based on the promise that approximately two-thirds of the vitamin A value of the average diet in this country is contributed by carotene and that carotene has half or less than half the value of vitamin A.

<sup>4</sup> For adults, (except pregnant and lactating women) receiving diets supplying 2000 calories or less, such as reducing diets, the allowances of thiamine and niacin may be 1 mg. and 10 mg. respectively. The fact that figures are given for different calorie levels for thiamine and niacin does not imply that we can estimate the requirement of these factors within 500 calories, but they are added merely for simplicity of calculation. In the present revision, riboflavin allowances are based on body weight rather than caloric levels. Other members of B complex also are required, though no values can be given. Foods supplying adequate thiamine, riboflavin, and niacin will tend to supply sufficient of the remaining B vitamins.



#### APPENDIX I (CON'D)

5 There is evidence that the male adult needs relatively little iron. The need will usually be provided for if the diet is satisfactory in other respects.

6 The need for supplemental vitamin D by vigorous adults leading a normal life seems to be minimum. For persons working at night and for nuns and others whose habits shield them from the sunlight, as well as for elderly persons, the ingestion of small amounts of vitamin D is desirable.

7 During the latter part of pregnancy the caloric allowance should increase approximately 20 percent above the preceding level. The value of 2400 calories represents the allowance for pregnant, sedentary women.

8 Allowances for children are based on the needs for the middle year in each group (as 2, 5, 8, etc.) and are for moderate activity and for average weight at the middle year of the age group.

9 Needs for infants increase from month to month with size and activity. The amounts given are for approximately 6 to 8 months. The Dietary requirements for some of the nutrients such as protein and calcium are less if derived largely from human milk.



APPENDIX II  
Benchmark Levels of the National Research Council

The "benchmark levels", as designated by the National Research Council, are as follows:

1. <u>Semi-Starvation Level</u>	60% of normal
2. <u>Emergency Subsistence Level</u>	75% " "
3. <u>Temporary Maintenance Level</u>	85% " "
4. <u>Short Term Relief Level</u>	92% " "
5. <u>Reference Level</u>	100% " "
6. <u>Optimal Rehabilitation Level</u>	120% " "

The effects to be expected from these different consumption levels on health, well-being, and capacity for work, may be summarized in a general way as follows:

1. At the "semi-starvation level" the energy provided will be insufficient to enable a population to continue even the minimum amount of work necessary to prevent further deterioration in its own economy and in its social structure.
2. The "emergency subsistence level" is the minimum needed to prevent very serious under nutrition leading to a marked increase in mortality and to grave danger of civil unrest. If food consumption falls appreciably below the emergency subsistence level for a matter of weeks or at most months, serious consequences must be expected.
3. The "temporary maintenance level" is sufficiently high to maintain populations without serious breakdown in general health for at least a considerable number of months. This would not provide for rapid and complete rehabilitation and would not be tolerable over a period of years. The psychological effects -- apathy, depression, and irritability -- will militate against the maintenance or development of satisfactory political and social conditions.
4. The "short term relief level" is considered to be close to the minimum on which a country could make effective progress in repairing the damages of war, rebuilding its economy and attaining a reasonable degree of social stability. It is recommended that consumption should be raised as quickly as possible above this restricted level.
5. The "reference level" represents the caloric consumption on which each particular population has been able, in some recent past period, to carry on its normal activities and maintain its normal weight. For the present purpose it may be assumed to correspond with the prewar consumption levels of the countries involved when these have been adjusted in the ways indicated above.
6. The "optimal rehabilitation level" provides, without excessive waste, for a nutritional intake sufficient to allow the most rapid progress of previously severely undernourished populations toward complete rehabilitation. The number of months during which such a level should be maintained depends on the level from which the process started.



C O P Y

APPENDIX III

SUPREME HEADQUARTERS  
ALLIED EXPEDITIONARY FORCE

AG 400-7 (Civil) GE-AGM

APC 757 (Main)  
25 January 1945

SUBJECT: Control of Distribution and Rationing of Food in Germany

TO: Headquarters, 21 Army Group  
Commanding General, Twelfth Army Group, APC 655  
Commanding General, Sixth Army Group, APC 23

1. Reference is made to Sections IV, VIII and XVII of the Directive for Military Government of Germany Prior to Defeat or Surrender, AG 014.1-1 (GER) GE-AGM, dated 9 November 1944.

2. GENERAL PRINCIPLES GOVERNING DISTRIBUTION OF FOOD IN GERMANY

a. No imported food will be issued to the German population except in extreme emergencies in areas where indigenous supplies are not available in sufficient quantities to prevent disease and such disorder among the civilian population as might endanger or seriously impede allied Military operations.

b. Levels of food consumption by the German population will not exceed those obtaining in liberated territories in the zone of responsibility of the Supreme Commander.

c. German authorities will be responsible for the maintenance or re-establishment of the German food distribution and rationing system, including price controls, and for the elimination from that system of all features which discriminate against groups or individuals on the basis of race, creed, color, or political opinion. Where the German food-control system is completely disrupted, it will be the responsibility of the German authorities to improvise a temporary system.

d. Wide variations will be found in the quantities of food available in various areas in Germany. The German authorities will be required to accumulate food supplies that are in excess of minimum requirements in surplus areas, to safeguard such stocks, and to arrange for their movement to deficit areas.

e. German authorities will be required as a matter of first priority to provide food for United Nations Displaced Persons in each camp and center approved by you at an average daily rate, insofar as feasible, of 2,000 calories per person. This rate will include both rationed and unrationed commodities. Ration allowances for other displaced persons and for United Nations displaced persons not in approved camps and centers will be at the same rate as for the German population.

f. German authorities may endeavor by every means to involve Allied military forces in responsibility for the provision and distribution of food for the civilian population. You will insure that no action is taken by troops under your command that would lead to this result.

3. RATION SCALE

a. In order to fulfill the principles outlined above, it will be necessary to prescribe from time to time the maximum allowances of food rations that German authorities will permit to be issued. It is not possible at present to estimate accurately the food situation in Germany; hence, the scale given below will be regarded as provisional.

b. Except as stated in paragraph 3e, the maximum allowances of rationed foods in calories per person per day that German authorities will permit for various consumer categories in the German rationing system are as follows:



CONSUMER GROUPCalories from  
Rationed Foods

Under 3 years	1000
3 to 5 years	1250
6 to 9 years	1600
10 to 17 years	1750
Expectant (last 5 mos.) and nursing mothers	2700
Normal consumers	1550
Heavy and night workers	2250
Very heavy workers	2800

The caloric levels indicated above should cover for each area all foods that are normally rationed in that area.

c. The imposition of maximum levels of food consumption in Germany does not involve the Allied military forces in any obligation to furnish supplies to meet these levels. The extent to which these maximum allowances may be attained will be dependent upon the availability of indigenous supplies and upon the effectiveness of the German authorities in administering the food collection and distribution system.

d. Army Groups and lower formations may establish ration levels lessor than these shown in paragraph 3b, if necessary, and will hold German authorities responsible for making such reductions from the prescribed maxima as may be needed to forestall shortages.

e. In no case will the maximum food-ration allowances prescribed by this headquarters be exceeded without its authorization, except,

- (1) Where Army Groups or lower formations determine that temporary surpluses of perishable foods would otherwise be wasted, and,
- (2) That Army Groups and lower formations may require that German authorities provide additional supplementary rations, as necessary, for workers employed on Allied military projects.

f. Pending further instructions, allowances of food and feed to self-suppliers obtained by retention of their own production will be continued at the German official levels that were in operation immediately prior to Allied occupation.

g. Reports on indigenous food resources in your area will be submitted to this headquarters in accordance with instructions to be issued. On the basis of these reports and of the ration allowances prevailing in liberated territories, this headquarters will instruct Army Groups from time to time regarding amendments in the food ration levels shown in paragraph 3b.

By direction of the Supreme Commander:

T.J. DAVIS  
Brigadier General, USA  
Adjutant General

DISTRIBUTION:

75 - HQ, 21 A Gp  
100 - CG, Twelfth A Gp  
75 - OG, Sixth A Gp  
25 - CG, Com Z, European T of Opns  
15 - U.S. Group C.C.  
15 - Control Commission (British)  
2 - G-3 Div  
2 - G-4 Div  
250 - G-5 Div  
1 - AG Records  
5 - CG, First Allied Airborne Army  
1 - Theater Judge Advocate



The foregoing directive was amended by undated letter Twelfth Army Group 430.2 (G-5 ES) Subject: Control of Distribution and Rationing of Food in Germany, as follows:

1. The maximum allowances given in paragraph 3b of basic letter are changed to read as follows:

CONSUMER GROUPCALORIES FROM RATIONED FOODS

Under 3 years	1,000
3 to 5 years	1,250
6 to 9 years	1,500
10 to 17 years	1,600
Expectant (last 5 months) & nursing mothers	2,200
Normal consumers	1,150
Heavy and night workers	2,250
Very heavy workers	2,800

2. Except when Armies require that supplementary fats and meat rations be provided as necessary for workers employed on Allied military projects, German authorities will not be permitted to issue a weekly ration per person of more than:

- a. 75 grams of butter, margarine and other fats.
- b. 175 grams of meat.

3. Until further notice, German authorities will not be permitted to use barley or other cereals in the manufacture of beer or alcoholic spirits for civilian consumption.

By command of Lieutenant General BRADLEY



C O P Y

APPENDIX IV  
HEADQUARTERS  
U.S. FORCES, EUROPEAN THEATER

AG/CLA/pkb

(Main) APO 757  
7 August 1945

AG 720 GEC-AGO

SUBJECT: German Civilians' Weights as Gauge of Nutritional Status

TO : Commanding General, Third US Army/Eastern Military District  
Commanding General, Seventh US Army/Western Military District

1. Periodical calculated average weights of adults will furnish an indication of the adequacy of the caloric intake of the population. Maintenance of body weight or gain in weight is adequate and definite evidence of a sufficient caloric intake, while a loss of body weight indicates the probability of insufficient caloric intake. The heights of individuals are related to their body weights, but if a sufficiently large number of the population are weighed without selection, it is unnecessary to record the heights of adults.

2. a. It is necessary to obtain, by the simplest methods available, an index of the nutritional status of the population. One of the simplest methods is sample weighing of populations effected in the manner outlined in the following paragraph.

b. It is desired that you issue the necessary instructions to furnish the following information, through proper channels to the Public Health Branch, G-5 Division, this headquarters, providing for the furnishing of such copies to intervening commands as you may deem appropriate:

- (1) Body weight (to the nearest 1 lb. or 0.5 kg) of male and female adults 20 years of age and over.
- (2) Body weights of the two sexes to be recorded separately by age groups 20 through 39; 40 through 59; 60 and over.
  - (a) Individuals should be selected at random from public places, such as queues, street corners, etc.
  - (b) Individuals should be weighed with shoes (not boots) and ordinary street clothes, but without overcoat, raincoat, handbags or packages. The exact reading of the scale should be recorded as the weight and no deductions or adjustments made by the weigher for clothing or other reasons
  - (c) All original weights should be reported, giving the calculated average weights for each age group and the location where weights were taken and recorded.
  - (d) The following number of persons should be weighed according to the size of the communities:

10,000 population - 5% to be weighed or a total of 500 or more.  
10,000-50,000 population - 2 1/2% to be weighed or at least 1250.  
100,000 population - 1.5% to be weighed or a total of 1500.  
500,000 population .75% to be weighed or a total of 3750.  
1,000,000 population 0.5% to be weighed or a total of 5000.

3. The report should state the known or estimated population of each community.

(Cont'd)



APPENDIX IV (CONTINUED)

4. It is desired that the weights be recorded initially as of 15 August 1945 and weighings be recorded every three months thereafter at locations approximately identical with those chosen initially, reports being submitted in the same manner as prescribed in paragraph 2, above.

BY COMMAND OF GENERAL EISENHOWER:

/s/ H.N. NEWMAN  
/t/ H.H. Newman  
Colonel, AGD  
Assistant Adjutant General

Copies to:  
CG., Berlin District  
G-5  
AG Records,  
(Reproduced in G-5 Division)



# APPENDIX V

C O P Y

## HEADQUARTERS U.S. FORCES, EUROPEAN THEATER Office of Military Government (U.S. Zone)

(Main) AFO 757  
23 October 1945

GEC-PH 720.1

SUBJECT: Standard of Minimum Nutrient Requirements

TO : Director, Office of Military Government for Bavaria  
Director, Office of Military Government (Western District)  
Director, Office of Military Government (Berlin District)

1. The Allied Control Authority has before it for consideration a paper on the adoption of a uniform nutritional standard and ration scale. Although agreement has been reached that uniformity is desirable, action has been necessarily deferred because of lack of information as to the prospective food resources in Germany and of the nutritional standards and ration scales of other European countries. These matters are being investigated.

2. The proposal before the Allied Control Authority sets forth a standard to be adopted as soon as possible in the future as being the minimum necessary for the growth of children, health of the population, reasonably effective output of coal and the prevention of civil unrest. This standard is as follows:

Category of Consumer		Protein gms	Calcium* mg	Iron mg	Vit** A
1. Children					
0-2		30	0.8	10	1000
3-5		45	0.6	10	1200
6-9	2000	55	0.6	10	1800
10-17	2700	65	0.6	10	2500
2. Pregnant or Nursing Women	2700	90	1.5	10	3500
3. Normal Consumers	2000	65	0.6	10	2500
4. Med-Heavy workers	2700	65	0.6	10	2500
5. Heavy Workers	3200	65	0.6	10	2500
6. Very heavy workers	3700	65	0.6	10	2500

a. Thiamin (Vitamin B1) 0.5 mgs per 1000 calories to 3000

b. Riboflavin 0.6 mgs. per 1000 calories to 3000

c. Niacin 10 mgs.

d. Vitamin D - 400 International units for infants 0-5

\* Calcium may be supplied in mineral form

\*\* Vitamin A expressed as such. Carotene valued at 1/3.

3. For the reasons previously indicated, it is not possible at this time to adopt the foregoing standard as a basis for rationing in the U.S. Zone. In the meantime, the U.S. representative proposes the continued use as a basis for planning of the provisional scale of rations set out in the paper before the Allied Control Authority. This scale is as follows:

Normal consumers	1,550 Calories
Moderately heavy worker	2,000 "
Heavy worker	2,500
Very heavy worker	3,000
Children & Pregnant women	

Daily Calorie value of  
total rations including

Daily allowances

Categories	Milk	of Milk
0-2	1,000	3/4 litre (whole)
3-5	1,200	1/2 litre (milk)



Categories	Daily Calorie value of total rations including Milk	Daily allowances of Milk
6-9	1,550	1/2 litre ) whole or
10-17	1,550	1/4 " (skimmed milk
Pregnant women	2,000	1/2 " )whole milk

4. Nutrition surveys of civilians in the U.S. Zone show that the current ration is insufficient in many areas and among considerable numbers and classes of the population. Significant deficiencies in the amounts and kinds of food and nutrients have been disclosed by a less of body weight and other signs of nutritional deficiency disease shown on examination during these surveys. Although not as yet sufficient to affect seriously the health and working capacity of the population as a whole, they are additional evidence of the failure to meet minimum nutritional requirements. These deficiencies are the more significant because they have occurred during the summer season when maximum amounts of unrationed food, especially garden vegetables, were available to supplement the inadequate rationed items. The onset of winter, with inadequate shelter, insufficient clothing and the need for additional calories to maintain body heat may be expected to increase the deficiency.

5. Continued failure to meet such minimum requirements can only result in loss of health, widespread nutritional deficiency disease, predisposition to epidemics and an inability to do essential work and maintain necessary activities.

6. Because of the possible serious consequence of inability to meet the requirements specified in paragraph 2 above, Military Government officers at all echelons should require the Public Health officers to inform and advise them of the current state of nutrition of the population in their areas.

7. In view of the foregoing, Military Government health officers should be informed that:

a. The requirements listed in paragraph 2 should be used as the standard in determining adequacy of individual food intake, and in preparing reports on rationing, food consumption and nutritional state applicable to German civilians and displaced persons.

b. All Military Government personnel should be informed of the dangers and results of inability to meet these requirements and the need to foresee and detect them, and the need for expending every effort to prevent deficiencies insofar as possible by conforming even the provisional ration scale to the nutritional as distinguished from the caloric, standards set forth in paragraph 2.

c. Each Director, Office of Military Government should regularly obtain technical advice and recommendations required with reference to the foregoing from the senior Public Health Officer of the detachment.

8. There is no directive or intent contained in the foregoing to establish or require changes in present food ration scales without prior approval of this Headquarters.

/s/ C.L. Adcock  
/t/ C.L. ADCOCK  
Major General, GSC  
Director



C O P Y

APPENDIX VI

HEADQUARTERS  
U.S. FORCES, EUROPEAN THEATER

AG 400 GDS-AGO

(Main) APO 757  
2 November 1945

SUBJECT: Delineation of Supply Responsibility

TO : Commanding Generals:  
U.S. Forces, Austria  
U.S. Air Forces in Europe  
Office of Military Government for Germany (U.S.)  
Theater Service Forces, European Theater (Rear)  
Each Military District  
Fifteenth U.S. Army  
XVI Corps  
Berlin District  
European Division, Air Transport Command  
Ground Force Reinforcement Command  
Headquarters Command, U.S. Forces, European Theater  
Heads of Missions  
Commanding Officer, Military Intelligence Service

1. In order to clarify supply responsibility for the furnishing of Food and Class II and IV Quartermaster items to displaced persons, prisoners of war, disarmed enemy forces, and other categories of non-U.S. military personnel, all concerned are advised that responsibility to and sources of supply for the various categories of personnel for which the Theater Commander is responsible are as delineated below. All previous directives on this subject are modified to the extent they are inconsistent herewith:

<u>Category of Personnel</u>	<u>General Staff Responsibility</u>	<u>Source of Supply</u>
(Personnel within these categories are limited to those to whom Theater Commander has supply responsibility.)		(U.S. military stocks <u>exclude</u> military government stocks.)
1. U.S. military personnel (including U.S. Navy and Merchant Marine)	G-4	U. S. military stocks
2. U.S. Civilians	G-4	U.S. military stocks
3. Red Cross	G-4	U.S. military stocks
4. Allied military personnel	G-4	U.S. military stocks

2. The extent of the Theater Commander's supply obligation to personnel in the various categories listed above varies from complete responsibility (in the case of U.S. military personnel) to a very limited responsibility (in the case of certain classes of civilian employees as to whom it is limited to one meal a day). The above statements of responsibility and sources are therefore solely for the purpose of delineating responsibility between the agencies indicated and are not intended to increase the extent of that responsibility as announced and defined in current directives.

3. It is the responsibility of all echelons of command to assure that issues of food, clothing and other items of supply furnished to any of the above classes, in accordance with current directives, are supervised by the appropriate general staff agency and that the supplies are issued from the indicated source or sources. This is essential since supplies have been and are being procured and distributed on the basis of responsibility announced and any diversion or misuse will jeopardize the ability of the supply agencies to



C O P Y

APPENDIX VI (CONTINUED)

to accomplish their mission.

4. Supplies controlled by one general staff division will not be used for or issued to categories of personnel for which that division is not responsible without specific authority from this headquarters.

BY COMMAND OF GENERAL EISENHOWER:

/s/ R. B. Lovett  
Brigadier General, USA  
Adjutant General

DISTRIBUTION: "D", plus

APPENDIX VII

C O P Y

HEADQUARTERS  
U.S. FORCES, EUROPEAN THEATER

AG 720 GEC-AGO

(Main) APO 757  
10 November 1945

SUBJECT: German Civilian Weights as Gauge of Nutritional Status

TO : Commanding Generals:  
Eastern Military District  
Western Military District

1. Letter, this headquarters, file and subject as above, dated 7 August 1945 is revised in accordance with the following instructions, included herein for the guidance of all concerned.

2. Periodical calculated average weights of adults have furnished an indication of the adequacy of the caloric intake of the population. Maintenance of body weight or gain in weight is adequate and definite evidence of a sufficient caloric intake while a loss of body weight indicates the probability of insufficient caloric intake. The heights of individuals are related to their body weights, but if a sufficiently large number of the population is weighted without selection, it is unnecessary to record the heights of adults.

3. a. It is necessary to continue obtaining by the simplest methods available an index of the nutritional status of the population. One of the simplest methods is sample weighing of populations effected in the manner outlined below.

b. Pending inclusion of this revised directive in Military Government regulations, it is desired that you issue, with assigned approval number MG/PH/4/A, the necessary instructions to furnish the following information monthly direct to Public Health Branch, Office of Military Government (U.S. Zone), this headquarters, providing for the furnishing of such copies of intervening commands as you may deem appropriate:

- (1) The following minimum number of persons will be weighted monthly in every community of 10,000 population and over, according to the size of the community:

10,000 - 50,000 population, 5% to be weighted

(cont'd)



## APPENDIX VII (CONTINUED)

50,000 - 100,000 population  $2\frac{1}{2}\%$  to be weighted  
 100,000 - 500,000 population  $1\frac{1}{2}\%$  to be weighted  
 500,000 - 1 Million " 0.75% " " "  
 1 million and over " 0.5 % " " "

- (2) Body weight (to the nearest 1 lb. or 0.5 kg.) of male and female adults 20 thru 39; 40 thru 59; 60 and over.
- (3) Individuals should be selected at random from public places such as queues, street corners, etc.
- (4) Individuals should be weighed with shoes (not boots) and ordinary street clothes without overcoat, raincoat, handbags or packages. The exact reading of the scale should be recorded as the weight and no deductions or adjustments made by the weigher for clothing or other reasons.
- (5) All original weights should be reported, giving the calculated average weights for each sex and age group and the location where weights were taken and recorded.

4. The report should state the known or estimated population of each community and the number of individuals weighed in each sex and age group.

5. It is desired that the weights be obtained each month at locations approximately identical with those previously chosen, reports being submitted in the same manner as prescribed in paragraph 3 above.

BY COMMAND OF GENERAL EISENHOWER;

/s/ T.W. Guptill  
 Captain, AGD  
 Assistant Adjutant General

DISTRIBUTION:

- 25 - Each addressee
- 4 - Berlin
- 25 - Public Health Branch, O/Mil Gov (U.S. Zone)
- 10 - Public Health & Welfare Division, O/Mil Gov for Germany (U.S.)
- 6 - Theater Chief Surgeon
- 1 - O/Mil Gov (U.S. Zone)



C O P Y

APPENDIX VIII

HEADQUARTERS  
U. S. FORCES, EUROPEAN THEATER

APD 757

14 February 1946

AG 335. GEC-AGO

SUBJECT: Inspection and Control of Food Rationing in U. S. Zone of Germany

To: Directors:

Office of Military Government for Bavaria  
Office of Military Government for Greater Hesse  
Office of Military Government for Wuerttemberg-  
Baden

1. Recent inspections by nutritional teams of the Public Health Branch, Office of Military Government (U.S. Zone), indicate that German civilians in the U. S. Zone are receiving food rations considerable in excess of the officially authorized ration scale. It is desired that you take the necessary action without delay to determine if ration scales are being exceeded or food otherwise illegally disposed of with in your land.

2. Brigadier General Hester of the Food and Agriculture Branch Office of Military Government for Germany (U.S.) has recently held conferences with the German Chiefs of Food and Agriculture, their principal assistants and food and agriculture experts of Military Government in the three laender of the U.S. Zone. In these conferences, the organization of inspection terms, the types of inspections and inspection guides were discussed in great detail. It is desired that you give all necessary assistance to these inspection terms in order that illegal scale and consumption of rationed food items may be eradicated.

3. The United States Government has undertaken to supplement indigenous Food supplies of importing the necessary food to supply a 1550 calory ration scale to the normal consumer. This import program is conditioned upon proper and maxium use being made of indigenous food supplies.

4. It is further desired that you report the Director, Office of Military Government (U.S. Zone), the results taken to eliminate illegal traffic in and consumption of rationed food items in your land.

BY COMMAND OF GENERAL McNARNEY:

EMANUEL SOLOMONS  
Major, AGD  
Assistant Adjutant General

Copies:

OMG (2)

A G Records



Pages 47 - 48 missing



C O P Y

APPENDIX X

UNITED STATES FORCES  
EUROPEAN THEATER  
G-5 Division

21 July 1945

SUBJECT: Organization of Permanent Nutrition Survey Teams.

TO : Chief, Public Health Branch

SUMMARY

Organization of each team - Five teams for U.S. zone in Germany

1. Personnel (11)

- a. One Medical officer (Major, MC)
- b. Two nutrition officers (Majors, SC)
- c. One laboratory officer (Capt, SC)
- d. One clerk-typist (Sgt)
- e. Three drivers
- f. Three interpreters

2. Vehicles

- a. One command car and 1-ton trailer
- b. One 3/4-ton carryall WC 53 (or ambulance)
- c. One jeep and 1/4-ton trailer

3. Equipment

- a. One portable calculating machine
- b. One portable typewriter
- c. One set of laboratory equipment as developed by medical nutrition laboratory, Chicago, Illinois
- d. Two portable scales (bath-room)
- e. Three slide rules
- f. One field desk
- g. One pleximeter
- h. One tuning fork (C-256)
- i. Two folding rulers (2 meters)
- j. One hand slit lamp (Bausch & Lomb)
- k. One stethoscope
- l. Eight flashlights

4. For discussion of personnel see inclosure I

(CONT'D)



## Inclosure I

1. The medical officer should be a competent internist with special interest in nutritional diseases. He should be in charge of the team and of sufficient rank to obtain a competent man in a position to make the necessary arrangements for his team activities.

2. Two nutrition officers are needed in order to take a sufficient number of dietary histories. This procedure is slow if done adequately and the medical officer can examine many more people than can be interviewed by the nutrition officer.

3. The laboratory officer is needed to run hemoglobin determinations, plasma proteins and such other special laboratory work as may be indicated such as plasma vitamin C, vitamin A leads, etc.

4. Three vehicles are needed in order to transport the personnel and equipment adequately and so that the officers can be making official calls and arranging the work without tying up the team.



Pages 51 - 53 missing

## APPENDIX XII

Personnel Engaged in Nutrition Activities During World War (ETO)MILITARY PERSONNEL

Andrae, Reed	2nd Lt.	SnC
Ashe, William F. Jr.	Lt. Colonel	MC
Bell, Thomas A.	1st Lt.	SnC
Bratton, Robert W.	Captain	SnC
Brown, Charles E.	1st Lt.	MC
Burge, Charles D.	1st Lt.	MC
Chambers, William H.	Lt. Colonel	SnC
Cooper, John A.D.	2nd Lt.	MC
Corlette, Marvin B.	Major	MC
Creer, Ralph P.	Major	
Denko, Charles W.	Captain	SnC
Dietz, Nicholas, Jr.	Captain	SnC
Engle, Howard A.	1st Lt.	MC
Fein, Harry D.	Captain	MC
Fitzpatrick, William H.	2nd Lt.	SnC
French, Cyrus E.	Captain	SnC
Gill, James P.	1st Lt.	MC
Goldstein, David H.	Major	MC
Griffith, Wendell H.	Colonel	SnC
Halpern, Richard M.	1st Lt.	MC
Harshbarger, Kenneth E.	Major	SnC
Howe, Paul E.	Colonel	SnC
Johnson, Clyde S.	Captain	SnC
Kaplan, Robert	Captain	MC
Leone, Nicholas C.	Major	SnC
Lewis, Robert V.	Captain	MC
Light, Amos E.	Captain	SnC
Lingefelter, John F.	1st Lt.	SnC
Lubitz, Josph A.	1st Lt.	SnC
Mackintosh, David L.	Captain	SnC
Monroe, Sanford C.	Major	MC
Nanz, Robert A.	2nd Lt.	SnC
Nasset, Edmund S.	Major	SnC
Osborne, Gladys H.	Captain	MC
Pader, Morton	2nd Lt.	SnC
Patton, Avery	1st Lt.	SnC
Pollack, Herbert	Lt. Colonel	MC
Rabe, Edward F.	1st Lt.	MC
Samuels, Clifford E.	2nd Lt.	SnC
Sano, Machteld E.	Captain	MC
Sebrell, William H.	Colonel (PH)	(PH)
Sherman, William C.	Captain	SnC
Silverman, Milton	1st Lt.	SnC
Spitzer, Eugene H.	1st Lt.	SnC
Sullivan, Royal A.	Captain	SnC
Supplee, William C.	Major	SnC
Swanson, Eric W.	1st Lt.	SnC
Voris, A. LeRoy	Captain	SnC
Weber, George R.	Captain	SnC
Wilcke, Harold L.	Major	SnC
Youmans, John B.	Colonel	MC
Zander, Donald V.	2nd Lt.	SnC



APPENDIX XII (CONT'D)

ENLISTED PERSONNEL

Debord, Rondel F.	PFC
Elliott, Harold J.	T/4
Ferrand, Amos H.	T/5
Frost, Viggo J.	PFC
Gorman, Regis R.	T/5
Giang, Paul A.	CPL
Kaye, Roger L.	T/5
Nair, John H. III	Sgt.
Reiner, Philip J.	PFC
Safir, Norman A.	PFC

CIVILIAN PERSONNEL

Davidson, Charles S.	MD	Boston City Hospital Boston, Mass.
Kampmeier, Rudolph H.	MD	Vanderbilt Univ. Medical School Nashville, Tenn.
Lowry, Oliver	MD	
Raymond, Natalie	Miss	Office of The Quartermaster General, Washington, D. C.
Robinson, William D.	MD	Michigan Medical School Ann Arbor, Michigan
Ruffin, Julian M.	MD	Duke University, Medical School, Durham, N. C.
Stare, Fredrick J.	MD	Harvard University School of Public Health Boston, Mass.

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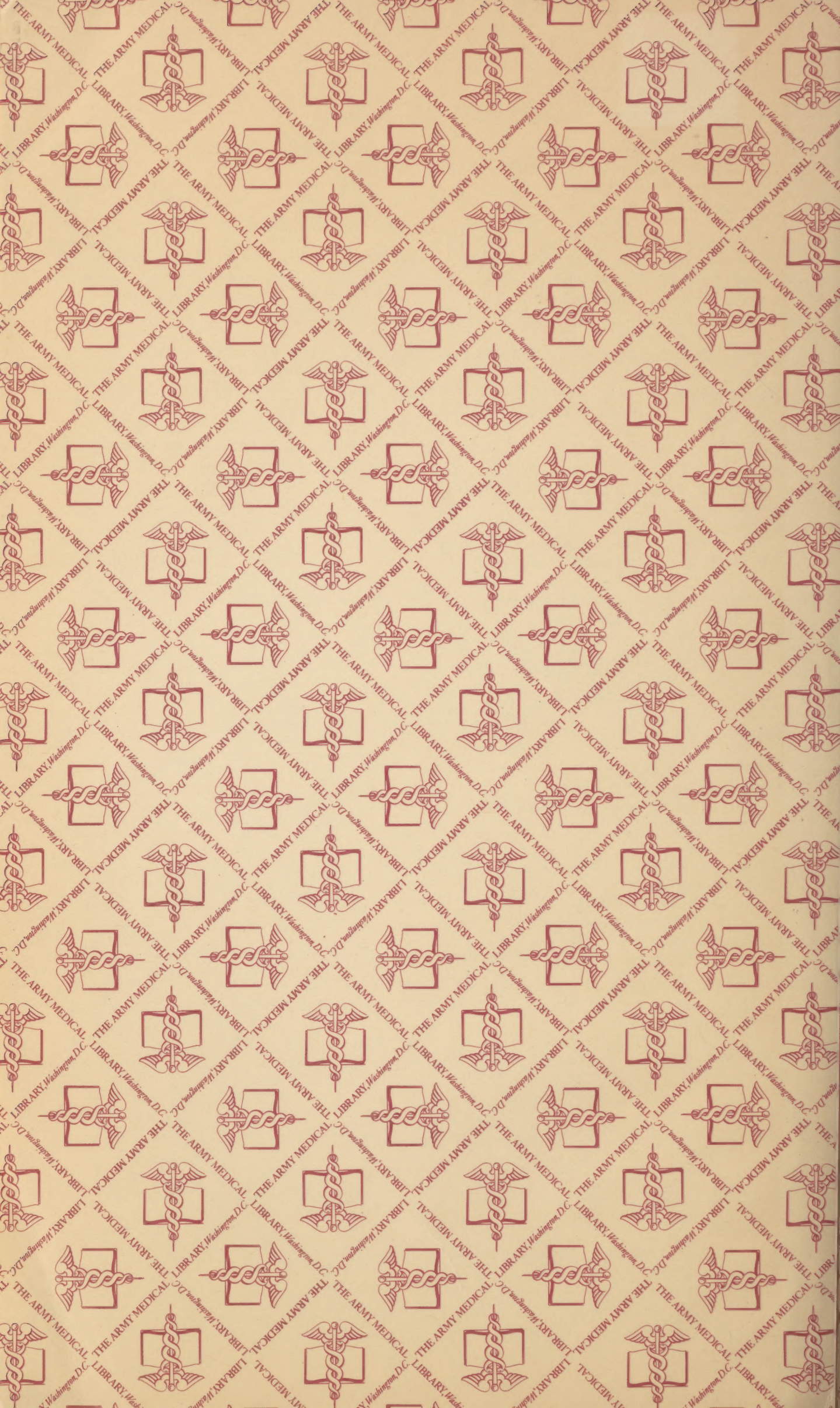
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